SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

November 7, 2018

Ms. Carol Sutkus
California Air Resources Board, AQPSD/AQPB
PO Box 2815
Sacramento, CA 95812

Subject: State Implementation Plan Revision, SMAQMD Rule 419

Dear Ms. Sutkus:

Enclosed is the information necessary for submittal of Rule 419, NOx from Miscellaneous Combustion Units, for revision to the State Implementation Plan. Our Board of Directors amended this rule on October 25, 2018. Please also forward the information for this submittal to U.S. EPA.

Under separate cover, we have transmitted to you amendments to Rule 414, Water Heaters, Boilers and Process Heaters Rated Less Than 1,000,000 BTU per Hour. The additional NOx emissions reductions from the amendments to Rule 419 are much greater than any potentially foregone emissions reductions resulting from the amendments to Rule 414.

If you have any comments or questions, please contact me by phone at (916) 874-4851 or by email at kjwilliams@airquality.org.

Sincerely,

Kevin J. Williams, Ph.D.
Program Supervisor

Attachments:

1. SIP Checklist
2. Final Version of Rule 419
3. Underline/Strikeout Version of Rule 419
4. Resolution
5. Rule Evaluation Form
6. Evidence of Public Notice
7. Statement of Reasons

c: Stephanie Parent, ARB
Ariel Fideldy, ARB
Marc Cooley, SMAQMD

w/ enclosures

777 12th Street, 3rd Floor ▮ Sacramento, CA 95814-1908
916/874-4800 ▮ 916/874-4899 fax
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CALIFORNIA AIR RESOURCES BOARD

SIP COMPLETENESS CHECKLIST
(Electronic Format)

***** TO BE COMPLETED BY DISTRICT AND RETURNED TO ARB *****

All rules submitted to the EPA as State Implementation Plan (SIP) revisions must be supported by certain information and documentation for the rule packages to be deemed complete for review by the EPA. Rules will not be evaluated for approvability by the EPA unless the submittal packages are complete. To assist you in determining that all necessary materials are included in rules packages sent to the ARB for submittal to the EPA, please fill out the following form and include it with the rule package you send ARB. See the ARB's Guidelines on the Implementation of the 40 CFR 51, Appendix V, for a more detailed explanation than is provided here. Adopted rules and rule amendments should be checked against U.S. EPA's Guidance Document for Correcting Common VOC & Other Rule Deficiencies (Little Blue Book, August 21, 2001) to ensure that they contain no elements which will result in disapproval by EPA.

District: Sacramento Metropolitan Air Quality Management District

Rule No: 419

Rule Title: NOx From Miscellaneous Combustion Units

Date Adopted or Amended: Amended October 25, 2018

ADMINISTRATIVE MATERIALS

Note: All documents should be in electronic format. Items that have signatures, initials, or stamps may be scanned.

Attached	Not Attached	N/A	
☒	☐	☐	**COMPLETE COPY OF THE RULE:** Provide an unmarked copy of the entire rule as adopted or amended by your District Board.
☒	☐	☐	**UNDERLINE AND STRIKEOUT COPY OF THE RULE**: If an amended rule, provide a complete copy of the rule indicating in underline and strikeout format all language which has been added, deleted, or changed since the rule was last adopted or amended.
☐	☐	☒	**COMPLETE COPY OF THE REFERENCED RULE(S):** For any rule which includes language specifically referencing another rule, a copy of that other rule must also be submitted, unless it has already been submitted to EPA as part of a previous SIP submittal.
☒	☐	☐	**PUBLIC NOTICE EVIDENCE:** Include a copy of the local newspaper clipping certification(s), stating the date of publication, which must be at least 30 days before the hearing. As an alternative, include a copy of the actual published notice of the public hearing as it appeared in the local newspaper(s). In this case, however, enough of the newspaper page must be included to show the date of publication. The notice must specifically identify by title and number each rule adopted or amended.
☒	☐	☐	**RESOLUTION/MINUTE ORDER:** Provide the Board Clerk certified resolution or minute order. This document must include certification that the hearing was held in accordance with the information in the public notice. It must also list the rules that were adopted or amended, the date of the public hearing, and a statement of compliance with California Health and Safety Code Sections 40725-40728 (Administrative Procedures Act).
☐	☐	☒	**PUBLIC COMMENTS AND RESPONSES:** Submit copies of written public comments made during the notice period and at the public hearing. Also submit any written responses prepared by the District staff or presented to the District Board at the public hearing. A summary of the public comments and responses is adequate. If there were no comments made during the notice period or at the hearing, please indicate N/A to the left.

CALIFORNIA AIR RESOURCES BOARD

SIP COMPLETENESS CHECKLIST
(Electronic Format)

TECHNICAL MATERIALS

Attached	Not Attached	N/A	
☒	☐	☐	**RULE EVALUATION FORM:** See instructions for completing the Rule Evaluation Form and the accompanying sample form.
☐	☐	☒	**NON-EPA TEST METHODS:** Attach all test methods that are referenced in your rule that do not appear in 40 CFR 51, 60, 61, 63, or have not been previously submitted to EPA. EPA methods used in other media such as SW846 for solid waste are not automatically approved for air pollution applications. Submittal of test methods that are not EPA-approved should include the information and follow the procedure described in Region 9's "Test Method Review & Evaluation Process."
☐	☐	☒	**MODELING SUPPORT:** Provide if appropriate. In general, modeling support is not required for VOC and NOx rules to determine their impacts on ozone levels. Modeling is required where a rule is a relaxation that affects large sources ($\geq$ 100 TPY) in an attainment area for SO2, directly emitted PM10, CO, or NOx (for NO2 purposes). In cases where EPA is concerned with the impact on air quality of rule revisions which relax limits or cause a shift in emission patterns in a nonattainment area, a reference back to the approved SIP will be sufficient provided the approved SIP accounts for the relaxation and provided the approved SIP used the current EPA modeling guidelines. If current EPA modeling guidelines were not used, then new modeling may be required.
☐	☐	☒	**ECONOMIC AND TECHNICAL JUSTIFICATION FOR DEVIATIONS FROM EPA POLICIES**: The District staff report or other information included with the submittal should discuss all potential relaxations or deviations from RACT, RACM, BACT, BACM, enforceability, attainment, RFP, or other relevant EPA requirements. This includes, for example, demonstrating that exemptions or emission limits less stringent than the presumptive RACT (e.g., a CTG) meet EPA's 5 percent policy, and demonstrating that all source categories exempted from a RACM/BACM rule are de minimus according to EPA's RACM/BACM policy.
☒	☐	☐	**ADDITIONAL MATERIALS**: Provide District staff reports and any other supporting information concerning development of the rule or rule changes. This information should explain the basis for all limits and thresholds contained in the rule.

CALIFORNIA AIR RESOURCES BOARD

APCD/AQMD RULE EVALUATION FORM -- Page 1

(Electronic Format)

I. GENERAL INFORMATION

District: Sacramento Metropolitan Air Quality Management District

Rule No(s): 419 Date adopted/Amended/Rescinded: Amended October 25, 2018

Rule Title(s): NOx from Miscellaneous Combustion Units

Date Submitted to ARB: November 7, 2018

If an Amended Rule, Date Last Amended (or Adopted): July 26, 2018

Is the Rule Intended to be Sent to the U.S. EPA as a SIP Revision? ☒ Yes ☐ No *(If No, do not complete remainder of form)*

District Contact: Kevin J. Williams Phone Number: (916) 874-4851 E-mail Address: kjwilliams@airquality.org

Narrative Summary of New Rule or Rule Changes: ☐ New Rule ☒ Amended Rule

The amendment to Rule 419 expands the applicability of the rule to all stationary sources that operate any miscellaneous comustion unit with a total rated heat input capactity of 5 million Btu/hr or greater. The rule includes NOx and CO emission limits for gaseous and liquid fuel-fired miscellaenous combustion units. The rule includes source testing requirements, source testing methods, maintenance requirements, and administrative requirements.

Pollutant(s) Regulated by the Rule (Check): ☐ ROG ☒ (NOx) ☐ SO2 ☒ (CO) ☐ PM ☐ TAC (name):_____

II. EFFECT ON EMISSIONS

Complete this section ONLY for rules that, when implemented, will result in quantifiable changes in emissions. Attach reference(s) for emission factor(s) and other information. Attach calculation sheet showing how the emission information provided below was determined.

Net Effect on Emissions: ☐ Increase ☒ Decrease ☐ N/A

Emission Reduction Commitment in SIP for this Source Category: None.

Inventory Year Used to Calculate Changes in Emissions: N/A Area Affected: Sacramento County

Future Year Control Profile Estimate *(Provide information on as many years as possible)*:
N/A

Baseline Inventory in the SIP for the Control Measure: N/A

Emissions Reduction Commitment in the SIP for the Control Measure: N/A

Revised Baseline Inventory (if any): N/A.

Revised Emission Reduction Estimate (if developed): N/A

Note that the district's input to the Rule Evaluation Form will not be used as input to the ARB's emission forecasting and planning.

III. SOURCES/ATTAINMENT STATUS

District is: ☐ Attainment ☒ Nonattainment ☐ Split

Approximate Total Number of Small (<100 TPY) Sources Affected by this Amendment: 19

Percent in Nonattainment Area: 100%

Number of Large (≥ 100 TPY) Sources Controlled: 0 Percent in Nonattainment Area: N/A%

Name(s) and Location(s) (city and county) of Large (≥ 100 TPY) Sources Controlled by Rule *(Attach additional sheets as necessary)*: N/A

IV. EMISSION REDUCTION TECHNOLOGY

Does the Rule Include Emission Limits that are Continuous? ☒ Yes ☐ No

If Yes, Those Limits are in Section(s) 301 and 302 of the Rule.

Other Methods in the Rule for Achieving Emission Reductions are: N/A

V. OTHER REQUIREMENTS

The Rule Contains:

Emission Limits in Section(s): 301 and 302 Work Practice Standards in Section(s): 303 and 304
Recordkeeping Requirements in Section(s): 502 Reporting Requirements in Section(s): N/A

APCD/AQMD RULE EVALUATION FORM -- Page 3
(Electronic Format)

VI. IMPACT ON AIR QUALITY PLAN

☐ No Impact ☒ Impacts RFP ☒ Impacts attainment

Discussion: Reduces emissions of NOx and contributes to reasonable further progress and attainment.

RESOLUTION NO. 2018 – 020

Adopted by the Sacramento Metropolitan Air Quality Management District

RULE 419 – NOx FROM MISCELLANEOUS COMBUSTION UNITS

BACKGROUND:

A. The Board of Directors of the Sacramento Metropolitan Air Quality Management District (Board) is authorized by Sections 40001, 40702, and 41010 of the California Health and Safety Code (HSC) to adopt, amend or repeal rules and regulations [HSC Section 40727(b)(2)].

B. The Board has determined that a need exists to amend Rule 419 to satisfy Best Available Retrofit Control Technology for all existing permitted sources, all feasible measures, and transport mitigation emission control requirements as required by HSC Sections 40919 and 40914, and Title 17, Section 70600 of the California Code of Regulations [HSC Section 40727(b)(1)].

C. The Board has determined that the meaning of Rule 419 can be easily understood by the persons affected by it [HSC Section 40727(b)(3)].

D. The Board has determined that Rule 419 is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations [HSC Section 40727(b)(4)].

E. The Board has determined that Rule 419 does not duplicate any existing state or federal regulations [HSC Section 40727(b)(5)].

F. The Board has determined that Rule 419 implements HSC Sections 40919 and 40914, and Title 17, Section 70600 of the California Code of Regulations [HSC Section 40727(b)(6)].

G. The Board has considered a written analysis prepared by Staff [HSC Section 40727.2].

H. The Board has maintained records of the rulemaking proceedings [HSC Section 40728].

I. The Board held a duly noticed public hearing on October 25, 2018, and considered public comments on Rule 419 [HSC Sections 40725 and 40726].

J. The Board has considered the socioeconomic impacts of the rule in Staff's Statement of Reasons [HSC Section 40728.5].

K. The Board evaluated Rule 419 to determine whether it is exempt from the California Environmental Quality Act (CEQA) under Section 15038 of the State CEQA Guidelines, as an action by a regulatory agency for the protection of the environment and under Section 15061(b)(3) of the State CEQA Guidelines, as an action for which it can be seen with certainty that there is no possibility the action may have a significant adverse effect on the environment.

BASED ON THE FACTS SET FORTH IN THE BACKGROUND, THE BOARD OF DIRECTORS RESOLVES AS FOLLOWS:

Section 1. The amendment of Rule 419 is exempt from CEQA.

Section 2. Approves and amends Rule 419 – NOx FROM MISCELLANEOUS COMBUSTION UNITS, shown in the attached Exhibit B.

Section 3 Rule 419 (set forth in Exhibit B) is effective as of October 25, 2018.

Section 4. Directs Staff to forward Rule 419 and all necessary supporting documents to the California Air Resources Board for submittal to U.S. EPA as a revision to the California State Implementation Plan.

Section 5. Exhibit B is attached to and incorporated into this Resolution.

ON A MOTION by Director Harris, seconded by Director Guerra, the foregoing resolution was passed and adopted by the Board of Directors of the Sacramento Metropolitan Air Quality Management District on October 25, 2018, by the following vote:

Ayes: Carr, Crews, Fox, Frost, Gaylord, Hansen, Ly, and Terry.

Noes:

Abstain:

Absent: Kennedy, Nottoli, Peters, and Serna.

ATTEST:

Clerk, Board of Directors
Sacramento Metropolitan Air Quality Management District

RULE 419 – NOx FROM MISCELLANEOUS COMBUSTION UNITS
Adopted 07-26-18
(Amended 10-25-18)

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100 GENERAL

101 **PURPOSE:** To limit the emissions of nitrogen oxides (NOx) and carbon monoxide (CO) from gaseous and liquid fuel-fired miscellaneous combustion units and cooking units, as defined in this rule.

102 **APPLICABILITY:** This rule applies to any miscellaneous combustion unit or cooking unit with a total rated heat input capacity of 2 million Btu per hour or greater that is located at a major stationary source of NOx and to any miscellaneous combustion unit or cooking unit with a total rated heat input capacity of 5 million Btu per hour or greater that is not located at a major stationary source of NOx.

103 **SEVERABILITY:** If any section, subsection, sentence, clause, phrase, or portion of this rule is, for any reason, held invalid, unconstitutional, or unenforceable by any court of competent jurisdiction, such portion is deemed as a separate, distinct, and independent provision, and such holding does not affect the validity of the remaining portions thereof.

110 **EXEMPTION – OPERATIONS SUBJECT TO OTHER DISTRICT RULES:** The requirements of this rule do not apply to any unit subject to requirements under the following rules:

110.1 Rule 411 – NOX FROM BOILERS, PROCESS HEATERS AND STEAM GENERATORS;

110.2 Rule 412 – STATIONARY IC ENGINES LOCATED AT MAJOR STATIONARY SOURCES OF NOX;

110.3 Rule 413 – STATIONARY GAS TURBINES; and

110.4 Rule 414 – WATER HEATERS, BOILERS AND PROCESS HEATERS RATED LESS THAN 1,000,000 BTU PER HOUR.

111 **EXEMPTION – UNITS NOT SUBJECT TO DISTRICT PERMIT:** The requirements of this rule do not apply to any unit exempt from Rule 201 – GENERAL PERMIT REQUIREMENTS.

112 **EXEMPTION – AIR POLLUTION CONTROL DEVICES:** The requirements of this rule do not apply to combustion equipment where its primary function is to operate as an air pollution control device including, but not limited to, afterburners, catalytic oxidizers, flares, thermal oxidizers, or vapor incinerators.

113 **EXEMPTION – DUCT BURNERS:** The requirements of this rule do not apply to duct burners operating upstream of and controlled by a properly working selective catalytic reduction (SCR) add-on NOx control device that complies with all pertinent permit conditions.

114 **EXEMPTION – SPECIFIC COMBUSTION UNITS:** The requirements of this rule do not apply to the following types of combustion units:

114.1 Any unit that is used exclusively by an electric utility to generate electricity.

114.2 Gas flares.

114.3 Internal combustion engines.

115 **EXEMPTION – LOW FUEL USAGE:**

115.1 The requirements of Sections 301, 302, 303.1, and 403 do not apply to any miscellaneous combustion unit or cooking unit that uses less than 30,000 therms per year of fuel, provided all of the following conditions are met:

a. The unit is not located at a major stationary source of NOx;

b The owner or operator of the unit meets the requirements of sections 303.2, 303.3, and either 502.2 or 502.3 as applicable; and

c. The owner or operator of the unit submits a permit application to the District pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS to establish a limitation on the fuel usage. To qualify for the exemption, the permit application must be submitted by April 25, 2019.

115.2 If the fuel usage for any unit claiming this exemption equals or exceeds 30,000 therms in any calendar year beginning on or after January 1, 2019, then the owner or operator of the unit must comply with the requirements in Section 402.

116 **EXEMPTION – SOURCE TESTING OF INACTIVE UNITS:**

116.1 The requirements of Section 403.2 do not apply to any miscellaneous combustion unit or cooking unit that is not operated in a calendar year in which source testing would otherwise be required. This exemption does not apply to a unit located at a major stationary source of NOx.

116.2. When an owner or operator resumes operation of a unit that was not source tested pursuant to the exemption in Section 116.1, an emission source test must be conducted within 60 days of resuming operation of the unit. Periodic source testing must then be conducted once every second calendar year from resuming operation pursuant to Section 403.2.

117 **EXEMPTION – SOURCE TESTING OF INFRARED BURNERS:** The source testing requirements in Section 403 do not apply provided all of the following conditions are met:

117.1 The unit is not located at a major stationary source of NOx; and

117.2 The unit is heated solely with infrared burners.

200 DEFINITIONS

201 **BRITISH THERMAL UNIT (BTU):** The amount of heat required to raise the temperature of one pound of water from 59 °F to 60 °F at one atmosphere of pressure.

202 **COOKING UNIT:** Any oven or dryer used to heat, cook, dry, roast, or prepare food, or products for making beverages, for human consumption.

203 **CREMATORY:** Any unit that reduces human or animal remains to bone fragments and ashes through heat and evaporation.

204 **DEHYDRATOR:** Any unit that drives free water from products like fruits, vegetables, and nuts at an accelerated rate without damage to the product.

205 **DRYER:** Any unit in which material is dried or cured in direct contact with the products of combustion.

206 **DUCT BURNER:** Any combustion equipment installed on existing ductwork and designed to further heat exhaust gases, to promote process drying or to preheat exhaust prior to a selective catalytic reduction (SCR) control device.

207 **FURNACE:** Any unit with an enclosed chamber in which heat is produced by a combustion source, typically used for metallurgy, pyrolysis, ashing, calcining, sintering, and other high temperature processes.

208 **GAS FLARE:** Any unit primarily used for burning off flammable gas released by pressure relief valves during unplanned over-pressuring of equipment. Gas flares are also often

used for the planned combustion of gases over relatively short periods during startup and shutdown, and to control landfill gas emissions, sewage treatment digester gas emissions, and oilfield waste gas emissions.

209 **HEATER:** Any unit that transfers heat from combusted fuel to materials or air contained in the unit or in an adjoining cabinet, container, or structure. Heater does not include any unit defined elsewhere in this rule.

210 **HEAT INPUT:** The heat of combustion released by fuels burned in a unit based on the higher heating value of the fuel. This does not include the enthalpy of incoming combustion air.

211 **HEAT OUTPUT:** The enthalpy of the working fluid output of a burner.

212 **HIGHER HEATING VALUE (HHV)**: The total heat liberated per mass or volume of fuel burned (Btu per pound, cubic foot, or gallon), when fuel and dry air undergo complete combustion and all resultant products are brought to their standard states. If certification of the HHV is not provided by the third party fuel supplier, it must be determined by one of the test methods specified in Section 501.4.

213 **INFRARED BURNER:** Any unit with all of the following:

213.1 A ceramic, metal fiber, sintered metal, or perforated metal flame-holding surface;

213.2 More than 50% of the heat output as infrared radiation and operated in a manner where the zone including and above the flame-holding surface is red and does not produce observable blue or yellow flames in excess of one-half inch in length; and

213.3 A rated heat input capacity per square foot of flame holding surface of 100,000 Btu per hour or less.

214 **INCINERATOR:** Any unit that with an enclosed chamber in which heat, produced by combustion, is used to combust waste or oxidize contaminants to less harmful forms.

215 **INTERNAL COMBUSTION ENGINE:** A heat engine in which the combustion that generates the heat takes place inside the engine proper instead of in a furnace, including engines used for control of VOC emissions.

216 **KILN:** Any unit that has a thermally insulated chamber which produces temperatures sufficient to complete a process, such as hardening, drying, vitrification, or chemical change.

217 **MAJOR STATIONARY SOURCE OF NITROGEN OXIDES:** A stationary source whose potential to emit is 25 tons per year or greater of nitrogen oxides (NOx).

218 **METAL HEAT TREATING FURNACE:** Any furnace used in metallurgical operations to alter the physical, and sometimes chemical, properties of a metal. Examples of metal heat treating include, but are not limited to, annealing, case hardening, precipitation strengthening, tempering, normalizing and quenching.

219 **METAL MELTING FURNACE:** Any furnace in which scrap metal, ingots, and/or other forms of metals are charged and melted, with the melted metal tapped or poured into a ladle or directly into a mold or other shape forming receptacle.

220 **MISCELLANEOUS COMBUSTION UNIT:** Any crematory, dehydrator, dryer, furnace, heater, incinerator, kiln, oven, roaster, or other combustion equipment not specifically required to comply with requirements of other District Regulation 4 – Prohibitory Rules. Miscellaneous combustion unit does not include any cooking unit.

221 **OVEN:** Any unit with a thermally insulated chamber supplied with heat from combusted fuel in which material is heated, baked, dried, or cured in direct contact with the products of combustion.

222 **PROCESS TEMPERATURE:** For the purpose of this rule, the process temperature of a unit is considered to be the maximum operating temperature of the unit under maximum designed production rate.

223 **RATED HEAT INPUT CAPACITY:** The heat input capacity in million Btu per hour specified on the nameplate of the miscellaneous combustion unit or cooking unit. If the heat input capacity on the nameplate of the combustion unit's burner is different from the heat input capacity on the nameplate of the unit, the heat input capacity of the burner will be used to determine rated heat input capacity. If the combustion unit has been altered or modified such that its maximum heat input capacity is different than the heat input capacity specified on the nameplate, the new maximum heat input capacity will be considered as the rated heat input capacity.

224 **ROASTER:** Any oven used to dry roast nuts, coffee beans, or other plant seeds.

225 **SHUTDOWN:** The period of time a unit is cooled from its normal operating temperature. The shutdown period is limited to two hours.

226 **SOYBEAN ROASTER:** Any oven used to dry roast soybeans or other similar legumes where the soybeans or other legumes travel directly through the burner flame.

227 **STARTUP:** The period of time, not to exceed two hours, in which a unit is brought to its operating temperature and pressure immediately after a period in which the fuel flow is shut off for a continuous period of 30 minutes or longer.

228 **STATIONARY SOURCE:** Any building, structure, facility, or emissions unit that emits or may emit any regulated air pollutant directly or as a fugitive emission.

228.1 Building, structure, facility, or emissions unit includes all pollutant emitting activities that:

a. belong to the same industrial grouping, and
b. are located on one property or on two or more contiguous properties, and
c. are under the same or common ownership, operation, or control or are owned or operated by entities that are under common control.

228.2 Pollutant emitting activities are considered a part of the same industrial grouping if:

a. they belong to the same two-digit standard industrial classification (SIC) code, or
b. they are part of a common production process. (Common production process includes industrial processes, manufacturing processes and any connected processes involving a common material).

229 **THERM:** One hundred thousand (100,000) British Thermal Units.

300 STANDARDS

301 **EMISSION LIMITS – MISCELLANEOUS COMBUSTION UNITS:** Except as provided in Sections 113 and 115, the NOx and CO emissions from any miscellaneous combustion unit may not exceed the limits specified in Table 1. The NOx and CO emissions must be determined pursuant to Section 501. The owner or operator may choose to comply with the limits expressed as parts per million by volume on a dry basis, corrected to three percent oxygen, or expressed as pounds per million Btu.

TABLE 1: MISCELLANEOUS COMBUSTION UNITS EMISSION LIMITS EXPRESSED AS PPMV @ 3% O_2			
Equipment Category	**NOx Limit ppmv @ 3% O_2 (lb/MMBtu)**		**CO Limit ppmv @ 3% O_2 (lb/MMBtu)**
	Effective (see Section 401)		
	Process Temperature		
Gaseous Fuel-Fired Equipment	< 1200 °F	≥ 1200 °F	
Asphalt Manufacturing Operation	40 (0.049)	40 (0.049)	400 (0.30)
Incinerator or Crematory	60 (0.073)	60 (0.073)	400 (0.30)
Metal Heat Treating or Metal Melting Furnace	60 (0.073)	60 (0.073)	400 (0.30)
Other Furnace	30 (0.036)	60 (0.073)	400 (0.30)
Oven, Dehydrator, Dryer, Heater, or Kiln	30 (0.036)	60 (0.073)	400 (0.30)
Soybean Roaster	45 (0.055)	60 (0.073)	–
Other miscellaneous combustion unit not listed above	30 (0.036)	60 (0.073)	400 (0.30)
Liquid Fuel-Fired Equipment	< 1200 °F	≥ 1200 °F	
All miscellaneous combustion units when liquid fuel-fired	40 (0.051)	60 (0.077)	400 (0.31)

302 **EMISSION LIMITS – COOKING UNITS:** Except as provided in Section 115, the NOx and CO emissions from any cooking unit may not exceed the limits specified in Table 2. The NOx and CO emissions must be determined pursuant to Section 501. The owner or operator may choose to comply with the limits expressed as parts per million by volume on a dry basis, corrected to three percent oxygen, or expressed as pounds per million Btu.

TABLE 2: COOKING UNITS EMISSION LIMITS EXPRESSED AS PPMV @ 3% O_2			
Equipment Category	**NOx Limit ppmv @ 3% O_2 (lb/MMBtu)**		**CO Limit ppmv @ 3% O_2 (lb/MMBtu)**
	Effective (see Section 401)		
	Process Temperature		
	< 500 °F	≥ 500 °F	
Cooking Unit	40 (0.049)	60 (0.073)	800 (0.60)

303 **EQUIPMENT REQUIREMENT – FUEL CONSUMPTION:**

303.1 The owner or operator of any unit demonstrating compliance with an emission limit of Sections 301 or 302 expressed as pounds per million Btu must install and maintain in service a non-resetting, totalizing fuel meter for each fuel prior to the compliance demonstration. The owner or operator of any unit with a combustion system that operates at only one firing rate who is demonstrating compliance with an emission limit expressed as pounds per million Btu must install and maintain in service a non-resetting, totalizing time or fuel meter for each fuel.

303.2 The owner or operator of any unit exempt from the NOx and CO emission limits in

Sections 301 or 302 pursuant to Section 115 must comply with one of the following conditions:

a. Install and maintain in service a non-resetting, totalizing fuel meter in the fuel line for each fuel burned. Each unit serviced by the fuel line must have a meter installed to monitor fuel consumption; or

b. Install and maintain in service a non-resetting, totalizing hour meter. This requirement applies to each unit relying on an hour meter to estimate fuel usage. In this case, the fuel usage must be calculated by multiplying the number of operating hours for the unit by the rated heat input capacity for the unit; or

c. Install and maintain in service a computerized tracking system that maintains a continuous daily record of hours of operation and/or fuel consumption rate. If only hours of operation are recorded, the fuel usage must be calculated by multiplying the number of operating hours for the unit by the rated heat input capacity for the unit. If both hours of operation and fuel consumption rate are recorded, the actual recorded fuel consumption rate must be integrated over the actual number of hours operated to determine total fuel usage.

303.3 Meters that require electric power to operate must be provided a permanent supply of electric power that cannot be unplugged, switched off, or reset except by the main power supply circuit for the building and associated equipment or the unit's safety shut-off switch. Any person operating any unit subject to this rule may not shut off electric power to a unit meter unless the unit is not operating and is shut down for maintenance or safety.

304 **EQUIPMENT REQUIREMENT – MAINTENANCE:** The owner or operator of any unit subject to this rule must perform combustion system maintenance in accordance with the manufacturer's schedule and specifications as identified in the manual or other written materials supplied by the manufacturer, distributor, installer, or maintenance company. Records of maintenance must be maintained as provided in Section 502.1.

400 ADMINISTRATIVE REQUIREMENTS

401 **COMPLIANCE SCHEDULE:** Except as provided in Sections 115 and 402, an owner or operator of any unit subject to Section 301 or 302 must demonstrate compliance with this rule by the following dates.

401.1 For any unit located at a major stationary source of NOx:

a. Unit installed after July 26, 2018: within 60 days after initial operation.

b. Unit installed on or before July 26, 2018: October 26, 2018.

401.2 For any unit not located at a major stationary source of NOx:

a. Unit installed after October 25, 2018: within 60 days after initial operation.

b. Unit installed on or before October 25, 2018: in accordance with the schedule in Table 3.

TABLE 3: COMPLIANCE SCHEDULE

Number of units subject to Sections 301 or 302	**Number of these units required to be in full compliance by October 25, 2019**	**Number of these units required to be in full compliance by October 25, 2020**	**Number of these units required to be in full compliance by October 25, 2021**
1 or 2	1	2	N/A
3 or more	1	2	All

Note: Full Compliance identifies the date by which the owner or operator must demonstrate that each unit is in compliance with this rule.

402 **LOSS OF EXEMPTION – LOW FUEL USAGE:** Effective January 1, 2019 for any unit that loses its exemption pursuant to Section 115.2, the owner or operator must conduct an initial source test and demonstrate compliance with the requirements of Section 301 or 302 within one year from the end of the calendar year in which the unit first did not meet the requirements for exemption in Section 115. The unit subsequently will not qualify for exemption pursuant to Section 115.

403 **SOURCE TESTING FREQUENCY:** Except as provided in Sections 115 and 402, the owner or operator of any unit subject to the emissions limits set forth in Section 301 or 302 must perform emission source testing using the test methods specified in Section 501 of this rule according to the following schedule and maintain records as provided in Section 502:

403.1 **Initial source test:** An initial source test to verify compliance on or before the applicable compliance date specified in Section 401.

403.2 **Periodic source testing:** A periodic emissions source test once every second calendar year after the initial source test.

403.3 Any unit that is equipped with a continuous emissions monitoring system (CEMS) must conduct accuracy testing using the methods specified in Section 501 of this rule once every calendar year.

404 **SOURCE TESTING PROTOCOL:** At least 30 days prior to the scheduled source test date, the owner or operator of any unit subject to this rule must submit a source test plan to the Air Pollution Control Officer. At least seven days prior to the source test date, the owner or operator must notify the Air Pollution Control Officer of the exact date and time of the source test. A final source test report, and the applicable source test observation and evaluation fee as authorized under Rule 301, must be submitted to the Air Pollution Control Officer within 60 days following the actual source test date.

500 MONITORING AND RECORDKEEPING

501 **TEST METHODS**

501.1. **GASEOUS EMISSIONS – SOURCE TEST:**

a. Compliance with the NOx and CO emission requirements and the stack oxygen requirements in Section 301 or 302 must be determined using the test methods specified below. All emissions determinations must be made in the as-found operating condition, except no compliance determination may be established during unit startup as defined in Section 227, or shutdown as defined in Section 225. Tests must be conducted while the unit is operating at a firing rate that is as close as physically possible to the unit's rated heat input capacity. Tests must be conducted for three 40-minute runs. The Air Pollution Control Officer may grant written approval to conduct shorter test periods if the owner or operator demonstrates that the design of the unit prevents operation for 40 consecutive minutes. Results must be averaged over the three test periods.

1. Oxides of Nitrogen – ARB Method 100 or EPA Method 7E.
2. Carbon Monoxide – ARB Method 100 or EPA Method 10.
3. Stack Gas Oxygen – ARB Method 100 or EPA Method 3A.
4. Any alternative source test method considered equivalent and that has been approved before the test in writing by the Air Pollution Control Officer, the California Air Resources Board, and the United States Environmental Protection Agency.

b. A scheduled source test may not be discontinued solely due to the failure of one or more runs to meet applicable standards.

c. In the event that a sample is accidently lost or conditions occur in which one of the three runs must be discontinued because of one of the following reasons, then compliance may be determined using the average of the other two runs:

1. Forced shutdown;

2. Failure of an irreplaceable portion of the sampling train;
3. Extreme meteorological conditions presenting a hazard to the sampling team; or
4. Other circumstances beyond the owner's or operator's control as determined by the Air Pollution Control Officer.

d. A source test not conducted pursuant to the source test methods listed in Section 501.1a may be rejected and the test report determined to be invalid.

501.2 **COMPLIANCE CALCULATION USING POUNDS PER MILLION BTU:** For any owner or operator who chooses to comply with the emission limits in Section 301 or 302 using pounds per million Btu, NOx and CO emissions in pounds per million Btu of heat input must be calculated using the procedures in EPA Method 19.

501.3 **GASEOUS EMISSIONS: CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS):** Compliance with NOx and CO emission requirements specified in Section 301 or 302 may also be determined using CEMS. All emissions determinations must be made in the as-found operating condition, except no compliance determination may be established during unit startup as defined in Section 227, or shutdown as defined in Section 225. Where the unit(s) are equipped with CEMS:

a. **General:** All CEMS must be installed according to the procedures specified in 40 CFR 60.13g. All CEMS must be installed such that a representative measurement of emissions is obtained. Additional procedures for the location of CEMS found in 40 CFR 60, Appendix B must be used. The data recorder for CEMS must be in operation at all times the unit is operated.

b. **Cycle time:** The owner or operator of any unit using CEMS must ensure that the CEMS system completes a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15 minute period.

c. **Calibration:** Zero and span must be checked once every 24 hours. The CEMS must be calibrated in accordance with the manufacturer's specifications.

d. **Averaging:** The data recorded during periods of calibration checks, zero and span adjustments must not be included in averaging for compliance determinations. Compliance must be determined on an hourly basis using the average of the three previous 1-hour average emissions concentrations. The 1-hour average emissions concentration must be determined from at least two data points recorded by the CEMS.

e. **Accuracy Testing:** Accuracy testing of CEMS must be conducted using a relative accuracy test audit pursuant to 40 CFR 60, Appendix F.

501.4 **HIGHER HEATING VALUE:** HHV must be determined by one of the following test methods:

a. ASTM D240-02 or ASTM D3282-98 for liquid hydrocarbon fuels; or

b. ASTM D1826-94, or ASTM D1945-03 in conjunction with ASTM D3588-98 for gaseous fuels; or

c. Any alternative test method considered equivalent and that has been approved before the test in writing by the Air Pollution Control Officer, the California Air Resources Board, and the United States Environmental Protection Agency.

501.5 **MULTIPLE TEST METHODS:** When more than one test method or set of test methods is specified for any testing, a violation of any requirement of this rule established by any one of the specified test methods or set of test methods will constitute a violation of this rule.

502 RECORDKEEPING

502.1 The owner or operator of any unit subject to the requirements of Section 304 must maintain on-site records of maintenance and a copy of the manufacturer's maintenance schedule and specifications in a manual or other written materials

supplied by the manufacturer, distributor, installer, or maintenance company.

502.2 The owner or operator of any unit exempt pursuant to Section 115 and subject to the requirements of Section 303.2 for fuel usage must record, for each unit, the calendar year gaseous and non-gaseous fuel usage, the HHV of each fuel used, and the total therms of fuel used in the calendar year.

502.3 The owner or operator of any unit exempt pursuant to Section 115 and subject to the requirements of Section 303.2 for hours of operation must record, for each unit, the calendar year hours of operation, and the calendar year calculated therms of fuel used.

502.4 The owner or operator of any unit subject to Section 501 must keep copies of all CEMS data and final source test reports as applicable.

502.5 Records must be maintained on site for a continuous 5-year period and made available for review by the Air Pollution Control Officer upon request.

RULE 419 – NOx FROM MISCELLANEOUS COMBUSTION UNITS
Adopted 07-26-18
(Amended XX-XX-18)

INDEX

100 GENERAL

101 **PURPOSE:** To limit the emissions of nitrogen oxides (NOx) and carbon monoxide (CO) from gaseous and liquid fuel-fired miscellaneous combustion units ~~located at a major stationary source of NOx~~and cooking units, as defined in this rule.

102 **APPLICABILITY:** This rule applies to any miscellaneous combustion unit or cooking unit with a total rated heat input capacity of 2 million Btu per hour or greater that is located at a major stationary source of NOx~~.~~ and to any miscellaneous combustion unit or cooking unit with a total rated heat input capacity of 5 million Btu per hour or greater that is not located at a major stationary source of NOx.

103 **SEVERABILITY:** If any section, subsection, sentence, clause, phrase, or portion of this rule is, for any reason, held invalid, unconstitutional, or unenforceable by any court of competent jurisdiction, such portion is deemed as a separate, distinct, and independent provision, and such holding does not affect the validity of the remaining portions thereof.

110 **EXEMPTION – OPERATIONS SUBJECT TO OTHER DISTRICT RULES:** The requirements of this rule do not apply to any unit subject to requirements under the following rules:

110.1 Rule 411 – NOX FROM BOILERS, PROCESS HEATERS AND STEAM GENERATORS;

110.2 Rule 412 – STATIONARY IC ENGINES LOCATED AT MAJOR STATIONARY SOURCES OF NOX;

110.3 Rule 413 – STATIONARY GAS TURBINES; and

110.4 Rule 414 – WATER HEATERS, BOILERS AND PROCESS HEATERS RATED LESS THAN 1,000,000 BTU PER HOUR.

111 **EXEMPTION – UNITS NOT SUBJECT TO DISTRICT PERMIT:** The requirements of this rule do not apply to any unit exempt from Rule 201 – GENERAL PERMIT REQUIREMENTS.

112 **EXEMPTION – AIR POLLUTION CONTROL DEVICES:** The requirements of this rule do not apply to combustion equipment where its primary function is to operate as an air pollution control device including, but not limited to, afterburners, catalytic oxidizers, flares, thermal oxidizers, or vapor incinerators.

113 **EXEMPTION – DUCT BURNERS:** The requirements of this rule do not apply to duct burners operating upstream of and controlled by a properly working selective catalytic reduction (SCR) add-on NOx control device that complies with all pertinent permit conditions.

114 **EXEMPTION – SPECIFIC COMBUSTION UNITS:** The requirements of this rule do not apply to the following types of combustion units:

114.1 Any unit that is used exclusively by an electric utility to generate electricity.

114.2 Gas flares.

114.3 Internal combustion engines.

~~114.4 Cooking units.~~

~~114.5 Crematories.~~

~~114.6 Dryers used in asphalt manufacturing operations.~~

~~114.7 Furnaces.~~

~~114.8 Incinerators.~~

~~114.9 Kilns.~~

~~114.10 Roasters.~~

115 **EXEMPTION – LOW FUEL USAGE:**

115.1 The requirements of Sections 301, 302, 303.1, and 403 do not apply to any miscellaneous combustion unit or cooking unit that uses less than 30,000 therms per year of fuel, provided all of the following conditions are met:

a. The unit is not located at a major stationary source of NOx;

b The owner or operator of the unit meets the requirements of sections 303.2, 303.3, and either 502.2 or 502.3 as applicable; and

c. The owner or operator of the unit submits a permit application to the District pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS to establish a limitation on the fuel usage. To qualify for the exemption, the permit application must be submitted by (six months after date of adoption).

115.2 If the fuel usage for any unit claiming this exemption equals or exceeds 30,000 therms in any calendar year beginning on or after January 1, 2019, then the owner or operator of the unit must comply with the requirements in Section 402.

116 **EXEMPTION – SOURCE TESTING OF INACTIVE UNITS:**

116.1 The requirements of Section 403.2 do not apply to any miscellaneous combustion unit or cooking unit that is not operated in a calendar year in which source testing would otherwise be required. This exemption does not apply to a unit located at a major stationary source of NOx.

116.2. When an owner or operator resumes operation of a unit that was not source tested pursuant to the exemption in Section 116.1, an emission source test must be conducted within 60 days of resuming operation of the unit. Periodic source testing must then be conducted once every second calendar year from resuming operation pursuant to Section 403.2.

117 **EXEMPTION – SOURCE TESTING OF INFRARED BURNERS:** The source testing requirements in Section 403 do not apply provided all of the following conditions are met:

117.1 The unit is not located at a major stationary source of NOx; and

117.2 The unit is heated solely with infrared burners.

200 DEFINITIONS

201 **BRITISH THERMAL UNIT (BTU):** The amount of heat required to raise the temperature of one pound of water from 59 °F to 60 °F at one atmosphere of pressure.

202 **COOKING UNIT:** Any oven or dryer used to heat, cook, dry, roast, or prepare food, or products for making beverages, for human consumption.

203 **CREMATORY:** Any unit that reduces human or animal remains to bone fragments and ashes through heat and evaporation.

204 **DEHYDRATOR:** Any unit that drives free water from products like fruits, vegetables, and nuts at an accelerated rate without damage to the product.

205 **DRYER:** Any unit in which material is dried or cured in direct contact with the products of combustion.

206 **DUCT BURNER:** Any combustion equipment installed on existing ductwork and designed to further heat exhaust gases, to promote process drying or to preheat exhaust prior to a selective catalytic reduction (SCR) control device.

207 **FURNACE:** Any unit with an enclosed chamber in which heat is produced by a combustion source, typically used for metallurgy, pyrolysis, ashing, calcining, sintering, and other high temperature processes.

208 **GAS FLARE:** Any unit primarily used for burning off flammable gas released by pressure relief valves during unplanned over-pressuring of equipment. Gas flares are also often used for the planned combustion of gases over relatively short periods during startup and shutdown, and to control landfill gas emissions, sewage treatment digester gas emissions, and oilfield waste gas emissions.

209 **HEATER:** Any unit that transfers heat from combusted fuel to materials or air contained in the unit or in an adjoining cabinet, container, or structure. Heater does not include any unit defined elsewhere in this rule.

210 **HEAT INPUT:** The heat of combustion released by fuels burned in a unit based on the higher heating value of the fuel. This does not include the enthalpy of incoming combustion air.

211 **HEAT OUTPUT:** The enthalpy of the working fluid output of a burner.

212~~1~~ **HIGHER HEATING VALUE (HHV)**: The total heat liberated per mass or volume of fuel burned (Btu per pound, cubic foot, or gallon), when fuel and dry air undergo complete combustion and all resultant products are brought to their standard states. If certification of the HHV is not provided by the third party fuel supplier, it must be determined by one of the test methods specified in Section 501.4.

213 **INFRARED BURNER:** Any unit with all of the following:

213.1 A ceramic, metal fiber, sintered metal, or perforated metal flame-holding surface;

213.2 More than 50% of the heat output as infrared radiation and operated in a manner where the zone including and above the flame-holding surface is red and does not produce observable blue or yellow flames in excess of one-half inch in length; and

213.3 A rated heat input capacity per square foot of flame holding surface of 100,000 Btu per hour or less.

214~~2~~ **INCINERATOR:** Any unit that with an enclosed chamber in which heat, produced by combustion, is used to combust waste or oxidize contaminants to less harmful forms.

215~~3~~ **INTERNAL COMBUSTION ENGINE:** A heat engine in which the combustion that generates the heat takes place inside the engine proper instead of in a furnace, including engines used for control of VOC emissions.

216~~4~~ **KILN:** Any unit that has a thermally insulated chamber which produces temperatures sufficient to complete a process, such as hardening, drying, vitrification, or chemical change.

217~~5~~ **MAJOR STATIONARY SOURCE OF NITROGEN OXIDES~~NOx~~:** A stationary source whose potential to emit is 25 tons per year or greater of nitrogen oxides (NOx).

218 **METAL HEAT TREATING FURNACE:** Any furnace used in metallurgical operations to alter the physical, and sometimes chemical, properties of a metal. Examples of metal heat treating include, but are not limited to, annealing, case hardening, precipitation strengthening, tempering, normalizing and quenching.

219 **METAL MELTING FURNACE:** Any furnace in which scrap metal, ingots, and/or other forms of metals are charged and melted, with the melted metal tapped or poured into a ladle or directly into a mold or other shape forming receptacle.

220~~16~~ **MISCELLANEOUS COMBUSTION UNIT:** Any crematory, dehydrator, dryer, furnace, heater, ~~or~~ incinerator, kiln, oven, roaster, or other combustion equipment not specifically required to comply with requirements of other District Regulation 4 – Prohibitory Rules. Miscellaneous combustion unit does not include any cooking unit.

2211~~7~~ **OVEN:** Any unit with a thermally insulated chamber supplied with heat from combusted fuel in which material is heated, baked, dried, or cured in direct contact with the products of combustion.

2221~~8~~ **PROCESS TEMPERATURE:** For the purpose of this rule, the process temperature of a unit is considered to be the maximum operating temperature of the unit under maximum designed production rate.

2231~~9~~ **RATED HEAT INPUT CAPACITY:** The heat input capacity in million Btu per hour specified on the nameplate of the miscellaneous combustion unit~~.~~ or cooking unit. If the heat input capacity on the nameplate of the combustion unit's burner is different from the heat input capacity on the nameplate of the unit, the heat input capacity of the burner will be used to determine rated heat input capacity. If the combustion unit has been altered or modified such that its maximum heat input capacity is different than the heat input capacity specified on the nameplate, the new maximum heat input capacity will be considered as the rated heat input capacity.

224~~0~~ **ROASTER:** Any oven used to dry roast nuts, coffee beans, or other plant seeds.

225~~1~~ **SHUTDOWN:** The period of time a unit is cooled from its normal operating temperature. The shutdown period is limited to two hours.

226 **SOYBEAN ROASTER:** Any oven used to dry roast soybeans or other similar legumes where the soybeans or other legumes travel directly through the burner flame.

227~~2~~ **STARTUP:** The period of time, not to exceed two hours, in which a unit is brought to its operating temperature and pressure immediately after a period in which the fuel flow is shut off for a continuous period of 30 minutes or longer.

228~~3~~ **STATIONARY SOURCE:** Any building, structure, facility, or emissions unit that emits or may emit any regulated air pollutant directly or as a fugitive emission.

228~~3~~.1 Building, structure, facility, or emissions unit includes all pollutant emitting activities that:

a. belong to the same industrial grouping, and
b. are located on one property or on two or more contiguous properties, and
c. are under the same or common ownership, operation, or control or are owned or operated by entities that are under common control.

228~~3~~.2 Pollutant emitting activities are considered a part of the same industrial grouping if:

a. they belong to the same two-digit standard industrial classification (SIC) code, or
b. they are part of a common production process. (Common production process includes industrial processes, manufacturing processes and any connected processes involving a common material).

229 **THERM:** One hundred thousand (100,000) British Thermal Units.

300 STANDARDS

301 **EMISSION LIMITS – MISCELLANEOUS COMBUSTION UNITS:** Except as provided in Sections 113 and 115, the NOx and CO emissions from any miscellaneous combustion unit may not exceed the limits specified in Table 1. The NOx and CO emissions must be determined pursuant to Section 501. The owner or operator may choose to comply with the limits expressed as parts per million by volume on a dry basis, corrected to three percent oxygen, or expressed as pounds per million Btu.

TABLE 1: MISCELLANEOUS COMBUSTION UNITS EMISSION LIMITS EXPRESSED AS PPMV @ 3% O_2			
Equipment Category	**NOx Limit ppmv @ 3% O_2 (lb/MMBtu)**		**CO Limit ppmv @ 3% O_2 (lb/MMBtu)**
	Effective (see Section 401)		
	Process Temperature		
Gaseous Fuel-Fired Equipment	< 1200 °F	≥ 1200 °F	
Asphalt Manufacturing Operation	40 (0.049)	40 (0.049)	400 (0.30)
Incinerator or Crematory	60 (0.073)	60 (0.073)	400 (0.30)
Metal Heat Treating or Metal Melting Furnace	60 (0.073)	60 (0.073)	400 (0.30)
Other Furnace	30 (0.036)	60 (0.073)	400 (0.30)
Oven, Dehydrator, Dryer, Heater, or ~~Oven~~Kiln	30 (0.036)	60 (0.073)	400 (0.30)
Soybean Roaster	45 (0.055)	60 (0.073)	–
Other miscellaneous combustion unit not listed above	30 (0.036)	60 (0.073)	400 (0.30)
Liquid Fuel-Fired Equipment	< 1200 °F	≥ 1200 °F	
All miscellaneous combustion units when liquid fuel-fired	40 (0.051)	60 (0.077)	400 (0.31)

302 **EMISSION LIMITS – COOKING UNITS:** Except as provided in Section 115, the NOx and CO emissions from any cooking unit may not exceed the limits specified in Table 2. The NOx and CO emissions must be determined pursuant to Section 501. The owner or operator may choose to comply with the limits expressed as parts per million by volume on a dry basis, corrected to three percent oxygen, or expressed as pounds per million Btu.

TABLE 2: COOKING UNITS EMISSION LIMITS EXPRESSED AS PPMV @ 3% O_2			
Equipment Category	**NOx Limit ppmv @ 3% O_2 (lb/MMBtu)**		**CO Limit ppmv @ 3% O_2 (lb/MMBtu)**
	Effective (see Section 401)		
	Process Temperature		
	< 500 °F	≥ 500 °F	
Cooking Unit	40 (0.049)	60 (0.073)	800 (0.60)

303~~2~~ **EQUIPMENT REQUIREMENT – FUEL CONSUMPTION:**

303~~2~~.1 The owner or operator of any unit demonstrating compliance with an emission limit of~~in~~ Sections 301 or 302 expressed as pounds per million Btu must install and maintain in service a non-resetting, totalizing fuel meter for each fuel prior to the compliance demonstration. The owner or operator of any unit with a combustion system that operates at only one firing rate who is demonstrating compliance with an emission limit expressed as pounds per million Btu must install and maintain in service a non-resetting, totalizing time or fuel meter for each fuel.

303.2 The owner or operator of any unit exempt from the NOx and CO emission limits in

Sections 301 or 302 pursuant to Section 115 must comply with one of the following conditions:

a. Install and maintain in service a non-resetting, totalizing fuel meter in the fuel line for each fuel burned. Each unit serviced by the fuel line must have a meter installed to monitor fuel consumption; or

b. Install and maintain in service a non-resetting, totalizing hour meter. This requirement applies to each unit relying on an hour meter to estimate fuel usage. In this case, the fuel usage must be calculated by multiplying the number of operating hours for the unit by the rated heat input capacity for the unit; or

c. Install and maintain in service a computerized tracking system that maintains a continuous daily record of hours of operation and/or fuel consumption rate. If only hours of operation are recorded, the fuel usage must be calculated by multiplying the number of operating hours for the unit by the rated heat input capacity for the unit. If both hours of operation and fuel consumption rate are recorded, the actual recorded fuel consumption rate must be integrated over the actual number of hours operated to determine total fuel usage.

303~~2~~.3~~2~~ Meters that require electric power to operate must be provided a permanent supply of electric power that cannot be unplugged, switched off, or reset except by the main power supply circuit for the building and associated equipment or the unit's safety shut-off switch. Any person operating any unit subject to this rule may not shut off electric power to a unit meter unless the unit is not operating and is shut down for maintenance or safety.

304~~3~~ **EQUIPMENT REQUIREMENT – MAINTENANCE:** The owner or operator of any unit subject to this rule must perform combustion system maintenance in accordance with the manufacturer's schedule and specifications as identified in the manual or other written materials supplied by the manufacturer, distributor, installer, or maintenance company. Records of maintenance must be maintained as provided in Section 502.1.

400 ADMINISTRATIVE REQUIREMENTS

401 **COMPLIANCE SCHEDULE:** Except as provided in Sections 115 and 402, ~~A~~an owner or operator of any unit subject to Section 301 or 302 must demonstrate compliance with this rule by the following dates.

401.1 For any unit located at a major stationary source of NOx:

a. ~~For units~~ Unit installed after July 26, 2018: within 60 days after initial operation.

b.~~401.2 For units~~ Unit installed on or before July 26, 2018: October 26, 2018.

401.2 For any unit not located at a major stationary source of NOx:

a. Unit installed after (date of adoption): within 60 days after initial operation.

b. Unit installed on or before (date of adoption): in accordance with the schedule in Table 3.

TABLE 3: COMPLIANCE SCHEDULE

Number of units subject to Sections 301 or 302	Number of these units required to be in full compliance by (12 months after date of adoption)	Number of these units required to be in full compliance by (24 months after date of adoption)	Number of these units required to be in full compliance by (36 months after date of adoption)
1 or 2	1	2	N/A
3 or more	1	2	All

Note: Full Compliance identifies the date by which the owner or operator must demonstrate that each unit is in compliance with this rule.

402 **LOSS OF EXEMPTION – LOW FUEL USAGE:** Effective January 1, 2019 for any unit that loses its exemption pursuant to Section 115.2, the owner or operator must conduct an initial source test and demonstrate compliance with the requirements of Section 301 or 302 within one year from the end of the calendar year in which the unit first did not meet the requirements for exemption in Section 115. The unit subsequently will not qualify for exemption pursuant to Section 115.

403~~2~~ **SOURCE TESTING FREQUENCY:** Except as provided in Sections 115 and 402, ~~T~~the owner or operator of any unit subject to the emissions limits set forth in Section 301 or 302 must perform emission source testing using the test methods specified in Section 501 of this rule according to the following schedule and maintain records as provided in Section 502:

403.1 **Initial source test:** ~~a~~An initial source test to verify compliance on or before ~~prior to~~ the applicable compliance date specified in Section 401.

403.2 **Periodic source testing:** A periodic ~~and must perform an~~ emissions source test once every second calendar year after the initial source test ~~using the test methods specified in Section 501 and maintain records as provided in Section 502~~.

403~~2~~.3~~1~~ Any unit that is equipped with a continuous emissions monitoring system (CEMS) must conduct accuracy testing using the methods specified in Section 501 of this rule once every calendar year.

404~~3~~ **SOURCE TESTING PROTOCOL:** At least 30 days prior to the scheduled source test date, the owner or operator of any unit subject to this rule must submit a source test plan to the Air Pollution Control Officer. At least seven days prior to the source test date, the owner or operator must notify the Air Pollution Control Officer of the exact date and time of the source test. A final source test report, and the applicable source test observation and evaluation fee as authorized under Rule 301, must be submitted to the Air Pollution Control Officer within 60 days following the actual source test date.

500 MONITORING AND RECORDKEEPING

501 **TEST METHODS**

501.1. **GASEOUS EMISSIONS – SOURCE TEST:**

a. Compliance with the NOx and CO emission requirements and the stack oxygen requirements in Section 301 or 302 must be determined using the test methods specified below. All emissions determinations must be made in the as-found operating condition, except no compliance determination may be established during unit startup as defined in Section 2272~~2~~, or shutdown as defined in Section 2251~~1~~. Tests must be conducted while the unit is operating at a firing rate that is as close as physically possible to the unit's rated heat input capacity. Tests must be conducted for three 40-minute runs. The Air Pollution Control Officer may grant written approval to conduct shorter test periods if the owner or operator demonstrates that the design of the unit prevents operation for 40 consecutive minutes. Results must be averaged over the three test periods.

1. Oxides of Nitrogen – ARB Method 100 or EPA Method 7E.
2. Carbon Monoxide – ARB Method 100 or EPA Method 10.
3. Stack Gas Oxygen – ARB Method 100 or EPA Method 3A.
4. Any alternative source test method considered equivalent and that has been approved before the test in writing by the Air Pollution Control Officer, the California Air Resources Board, and the United States Environmental Protection Agency.

b. A scheduled source test may not be discontinued solely due to the failure of one or more runs to meet applicable standards.

c. In the event that a sample is accidently lost or conditions occur in which one of the three runs must be discontinued because of one of the following reasons, then compliance may be determined using the average of the other two runs:
   1. Forced shutdown;
   2. Failure of an irreplaceable portion of the sampling train;
   3. Extreme meteorological conditions presenting a hazard to the sampling team; or
   4. Other circumstances beyond the owner's or operator's control as determined by the Air Pollution Control Officer.

d. A source test not conducted pursuant to the source test methods listed in Section 501.1a may be rejected and the test report determined to be invalid.

501.2 **COMPLIANCE CALCULATION USING POUNDS PER MILLION BTU:** For any owner or operator who chooses to comply with the emission limits in Section 301 or 302 using pounds per million Btu, NOx and CO emissions in pounds per million Btu of heat input must be calculated using the procedures in EPA Method 19.

501.3 **GASEOUS EMISSIONS: CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS):** Compliance with NOx and CO emission requirements specified in Section 301 or 302 may also be determined using CEMS. All emissions determinations must be made in the as-found operating condition, except no compliance determination may be established during unit startup as defined in Section 2272, or shutdown as defined in Section 2251. Where the unit(s) are equipped with CEMS:

a. **General:** All CEMS must be installed according to the procedures specified in 40 CFR 60.13g. All CEMS must be installed such that a representative measurement of emissions is obtained. Additional procedures for the location of CEMS found in 40 CFR 60, Appendix B must be used. The data recorder for CEMS must be in operation at all times the unit is operated.

b. **Cycle time:** The owner or operator of any unit using CEMS must ensure that the CEMS system completes a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15 minute period.

c. **Calibration:** Zero and span must be checked once every 24 hours. The CEMS must be calibrated in accordance with the manufacturer's specifications.

d. **Averaging:** The data recorded during periods of calibration checks, zero and span adjustments must not be included in averaging for compliance determinations. Compliance must be determined on an hourly basis using the average of the three previous 1-hour average emissions concentrations. The 1-hour average emissions concentration must be determined from at least two data points recorded by the CEMS.

e. **Accuracy Testing:** Accuracy testing of CEMS must be conducted using a relative accuracy test audit pursuant to 40 CFR 60, Appendix F.

501.4 **HIGHER HEATING VALUE:** HHV must be determined by one of the following test methods:

a. ASTM D240-02 or ASTM D3282-98 for liquid hydrocarbon fuels; or

b. ASTM D1826-94, or ASTM D1945-03 in conjunction with ASTM D3588-98 for gaseous fuels; or

c. Any alternative test method considered equivalent and that has been approved before the test in writing by the Air Pollution Control Officer, the California Air Resources Board, and the United States Environmental Protection Agency.

501.5 **MULTIPLE TEST METHODS:** When more than one test method or set of test methods is specified for any testing, a violation of any requirement of this rule established by any one of the specified test methods or set of test methods will constitute a violation of this rule.

502 **RECORDKEEPING**

502.1 The owner or operator of any unit subject to the requirements of Section 304~~3~~ must maintain on-site records of maintenance and a copy of the manufacturer's maintenance schedule and specifications in a manual or other written materials supplied by the manufacturer, distributor, installer, or maintenance company.

502.2 The owner or operator of any unit exempt pursuant to Section 115 and subject to the requirements of Section 303.2 for fuel usage must record, for each unit, the calendar year gaseous and non-gaseous fuel usage, the HHV of each fuel used, and the total therms of fuel used in the calendar year.

502.3 The owner or operator of any unit exempt pursuant to Section 115 and subject to the requirements of Section 303.2 for hours of operation must record, for each unit, the calendar year hours of operation, and the calendar year calculated therms of fuel used.

502.4~~2~~ The owner or operator of any unit subject to Section 501 must keep copies of all CEMS data and final source test reports as applicable.

502.5~~3~~ Records must be maintained on site for a continuous 5-year period and made available for review by the Air Pollution Control Officer upon request.

RULE 419 – NOx FROM MISCELLANEOUS COMBUSTION UNITS
Adopted 07-26-18
(Amended 10-25-18)

INDEX

100 GENERAL

101 **PURPOSE:** To limit the emissions of nitrogen oxides (NOx) and carbon monoxide (CO) from gaseous and liquid fuel-fired miscellaneous combustion units and cooking units, as defined in this rule.

102 **APPLICABILITY:** This rule applies to any miscellaneous combustion unit or cooking unit with a total rated heat input capacity of 2 million Btu per hour or greater that is located at a major stationary source of NOx and to any miscellaneous combustion unit or cooking unit with a total rated heat input capacity of 5 million Btu per hour or greater that is not located at a major stationary source of NOx.

103 **SEVERABILITY:** If any section, subsection, sentence, clause, phrase, or portion of this rule is, for any reason, held invalid, unconstitutional, or unenforceable by any court of competent jurisdiction, such portion is deemed as a separate, distinct, and independent provision, and such holding does not affect the validity of the remaining portions thereof.

110 **EXEMPTION – OPERATIONS SUBJECT TO OTHER DISTRICT RULES:** The requirements of this rule do not apply to any unit subject to requirements under the following rules:

110.1 Rule 411 – NOX FROM BOILERS, PROCESS HEATERS AND STEAM GENERATORS;

110.2 Rule 412 – STATIONARY IC ENGINES LOCATED AT MAJOR STATIONARY SOURCES OF NOX;

110.3 Rule 413 – STATIONARY GAS TURBINES; and

110.4 Rule 414 – WATER HEATERS, BOILERS AND PROCESS HEATERS RATED LESS THAN 1,000,000 BTU PER HOUR.

111 **EXEMPTION – UNITS NOT SUBJECT TO DISTRICT PERMIT:** The requirements of this rule do not apply to any unit exempt from Rule 201 – GENERAL PERMIT REQUIREMENTS.

112 **EXEMPTION – AIR POLLUTION CONTROL DEVICES:** The requirements of this rule do not apply to combustion equipment where its primary function is to operate as an air pollution control device including, but not limited to, afterburners, catalytic oxidizers, flares, thermal oxidizers, or vapor incinerators.

113 **EXEMPTION – DUCT BURNERS:** The requirements of this rule do not apply to duct burners operating upstream of and controlled by a properly working selective catalytic reduction (SCR) add-on NOx control device that complies with all pertinent permit conditions.

114 **EXEMPTION – SPECIFIC COMBUSTION UNITS:** The requirements of this rule do not apply to the following types of combustion units:

114.1 Any unit that is used exclusively by an electric utility to generate electricity.

114.2 Gas flares.

114.3 Internal combustion engines.

115 **EXEMPTION – LOW FUEL USAGE:**

115.1 The requirements of Sections 301, 302, 303.1, and 403 do not apply to any miscellaneous combustion unit or cooking unit that uses less than 30,000 therms per year of fuel, provided all of the following conditions are met:

a. The unit is not located at a major stationary source of NOx;

b The owner or operator of the unit meets the requirements of sections 303.2, 303.3, and either 502.2 or 502.3 as applicable; and

c. The owner or operator of the unit submits a permit application to the District pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS to establish a limitation on the fuel usage. To qualify for the exemption, the permit application must be submitted by April 25, 2019.

115.2 If the fuel usage for any unit claiming this exemption equals or exceeds 30,000 therms in any calendar year beginning on or after January 1, 2019, then the owner or operator of the unit must comply with the requirements in Section 402.

116 **EXEMPTION – SOURCE TESTING OF INACTIVE UNITS:**

116.1 The requirements of Section 403.2 do not apply to any miscellaneous combustion unit or cooking unit that is not operated in a calendar year in which source testing would otherwise be required. This exemption does not apply to a unit located at a major stationary source of NOx.

116.2. When an owner or operator resumes operation of a unit that was not source tested pursuant to the exemption in Section 116.1, an emission source test must be conducted within 60 days of resuming operation of the unit. Periodic source testing must then be conducted once every second calendar year from resuming operation pursuant to Section 403.2.

117 **EXEMPTION – SOURCE TESTING OF INFRARED BURNERS:** The source testing requirements in Section 403 do not apply provided all of the following conditions are met:

117.1 The unit is not located at a major stationary source of NOx; and

117.2 The unit is heated solely with infrared burners.

200 DEFINITIONS

201 **BRITISH THERMAL UNIT (BTU):** The amount of heat required to raise the temperature of one pound of water from 59 °F to 60 °F at one atmosphere of pressure.

202 **COOKING UNIT:** Any oven or dryer used to heat, cook, dry, roast, or prepare food, or products for making beverages, for human consumption.

203 **CREMATORY:** Any unit that reduces human or animal remains to bone fragments and ashes through heat and evaporation.

204 **DEHYDRATOR:** Any unit that drives free water from products like fruits, vegetables, and nuts at an accelerated rate without damage to the product.

205 **DRYER:** Any unit in which material is dried or cured in direct contact with the products of combustion.

206 **DUCT BURNER:** Any combustion equipment installed on existing ductwork and designed to further heat exhaust gases, to promote process drying or to preheat exhaust prior to a selective catalytic reduction (SCR) control device.

207 **FURNACE:** Any unit with an enclosed chamber in which heat is produced by a combustion source, typically used for metallurgy, pyrolysis, ashing, calcining, sintering, and other high temperature processes.

208 **GAS FLARE:** Any unit primarily used for burning off flammable gas released by pressure relief valves during unplanned over-pressuring of equipment. Gas flares are also often

used for the planned combustion of gases over relatively short periods during startup and shutdown, and to control landfill gas emissions, sewage treatment digester gas emissions, and oilfield waste gas emissions.

209 **HEATER:** Any unit that transfers heat from combusted fuel to materials or air contained in the unit or in an adjoining cabinet, container, or structure. Heater does not include any unit defined elsewhere in this rule.

210 **HEAT INPUT:** The heat of combustion released by fuels burned in a unit based on the higher heating value of the fuel. This does not include the enthalpy of incoming combustion air.

211 **HEAT OUTPUT:** The enthalpy of the working fluid output of a burner.

212 **HIGHER HEATING VALUE (HHV)**: The total heat liberated per mass or volume of fuel burned (Btu per pound, cubic foot, or gallon), when fuel and dry air undergo complete combustion and all resultant products are brought to their standard states. If certification of the HHV is not provided by the third party fuel supplier, it must be determined by one of the test methods specified in Section 501.4.

213 **INFRARED BURNER:** Any unit with all of the following:

213.1 A ceramic, metal fiber, sintered metal, or perforated metal flame-holding surface;

213.2 More than 50% of the heat output as infrared radiation and operated in a manner where the zone including and above the flame-holding surface is red and does not produce observable blue or yellow flames in excess of one-half inch in length; and

213.3 A rated heat input capacity per square foot of flame holding surface of 100,000 Btu per hour or less.

214 **INCINERATOR:** Any unit that with an enclosed chamber in which heat, produced by combustion, is used to combust waste or oxidize contaminants to less harmful forms.

215 **INTERNAL COMBUSTION ENGINE:** A heat engine in which the combustion that generates the heat takes place inside the engine proper instead of in a furnace, including engines used for control of VOC emissions.

216 **KILN:** Any unit that has a thermally insulated chamber which produces temperatures sufficient to complete a process, such as hardening, drying, vitrification, or chemical change.

217 **MAJOR STATIONARY SOURCE OF NITROGEN OXIDES:** A stationary source whose potential to emit is 25 tons per year or greater of nitrogen oxides (NOx).

218 **METAL HEAT TREATING FURNACE:** Any furnace used in metallurgical operations to alter the physical, and sometimes chemical, properties of a metal. Examples of metal heat treating include, but are not limited to, annealing, case hardening, precipitation strengthening, tempering, normalizing and quenching.

219 **METAL MELTING FURNACE:** Any furnace in which scrap metal, ingots, and/or other forms of metals are charged and melted, with the melted metal tapped or poured into a ladle or directly into a mold or other shape forming receptacle.

220 **MISCELLANEOUS COMBUSTION UNIT:** Any crematory, dehydrator, dryer, furnace, heater, incinerator, kiln, oven, roaster, or other combustion equipment not specifically required to comply with requirements of other District Regulation 4 – Prohibitory Rules. Miscellaneous combustion unit does not include any cooking unit.

221 **OVEN:** Any unit with a thermally insulated chamber supplied with heat from combusted fuel in which material is heated, baked, dried, or cured in direct contact with the products of combustion.

222 **PROCESS TEMPERATURE:** For the purpose of this rule, the process temperature of a unit is considered to be the maximum operating temperature of the unit under maximum designed production rate.

223 **RATED HEAT INPUT CAPACITY:** The heat input capacity in million Btu per hour specified on the nameplate of the miscellaneous combustion unit or cooking unit. If the heat input capacity on the nameplate of the combustion unit's burner is different from the heat input capacity on the nameplate of the unit, the heat input capacity of the burner will be used to determine rated heat input capacity. If the combustion unit has been altered or modified such that its maximum heat input capacity is different than the heat input capacity specified on the nameplate, the new maximum heat input capacity will be considered as the rated heat input capacity.

224 **ROASTER:** Any oven used to dry roast nuts, coffee beans, or other plant seeds.

225 **SHUTDOWN:** The period of time a unit is cooled from its normal operating temperature. The shutdown period is limited to two hours.

226 **SOYBEAN ROASTER:** Any oven used to dry roast soybeans or other similar legumes where the soybeans or other legumes travel directly through the burner flame.

227 **STARTUP:** The period of time, not to exceed two hours, in which a unit is brought to its operating temperature and pressure immediately after a period in which the fuel flow is shut off for a continuous period of 30 minutes or longer.

228 **STATIONARY SOURCE:** Any building, structure, facility, or emissions unit that emits or may emit any regulated air pollutant directly or as a fugitive emission.

228.1 Building, structure, facility, or emissions unit includes all pollutant emitting activities that:

a. belong to the same industrial grouping, and
b. are located on one property or on two or more contiguous properties, and
c. are under the same or common ownership, operation, or control or are owned or operated by entities that are under common control.

228.2 Pollutant emitting activities are considered a part of the same industrial grouping if:

a. they belong to the same two-digit standard industrial classification (SIC) code, or
b. they are part of a common production process. (Common production process includes industrial processes, manufacturing processes and any connected processes involving a common material).

229 **THERM:** One hundred thousand (100,000) British Thermal Units.

300 STANDARDS

301 **EMISSION LIMITS – MISCELLANEOUS COMBUSTION UNITS:** Except as provided in Sections 113 and 115, the NOx and CO emissions from any miscellaneous combustion unit may not exceed the limits specified in Table 1. The NOx and CO emissions must be determined pursuant to Section 501. The owner or operator may choose to comply with the limits expressed as parts per million by volume on a dry basis, corrected to three percent oxygen, or expressed as pounds per million Btu.

TABLE 1: MISCELLANEOUS COMBUSTION UNITS EMISSION LIMITS EXPRESSED AS PPMV @ 3% O_2			
Equipment Category	**NOx Limit ppmv @ 3% O_2 (lb/MMBtu)**		**CO Limit ppmv @ 3% O_2 (lb/MMBtu)**
	Effective (see Section 401)		
	Process Temperature		
Gaseous Fuel-Fired Equipment	< 1200 °F	≥ 1200 °F	
Asphalt Manufacturing Operation	40 (0.049)	40 (0.049)	400 (0.30)
Incinerator or Crematory	60 (0.073)	60 (0.073)	400 (0.30)
Metal Heat Treating or Metal Melting Furnace	60 (0.073)	60 (0.073)	400 (0.30)
Other Furnace	30 (0.036)	60 (0.073)	400 (0.30)
Oven, Dehydrator, Dryer, Heater, or Kiln	30 (0.036)	60 (0.073)	400 (0.30)
Soybean Roaster	45 (0.055)	60 (0.073)	–
Other miscellaneous combustion unit not listed above	30 (0.036)	60 (0.073)	400 (0.30)
Liquid Fuel-Fired Equipment	< 1200 °F	≥ 1200 °F	
All miscellaneous combustion units when liquid fuel-fired	40 (0.051)	60 (0.077)	400 (0.31)

302 **EMISSION LIMITS – COOKING UNITS:** Except as provided in Section 115, the NOx and CO emissions from any cooking unit may not exceed the limits specified in Table 2. The NOx and CO emissions must be determined pursuant to Section 501. The owner or operator may choose to comply with the limits expressed as parts per million by volume on a dry basis, corrected to three percent oxygen, or expressed as pounds per million Btu.

TABLE 2: COOKING UNITS EMISSION LIMITS EXPRESSED AS PPMV @ 3% O_2			
Equipment Category	**NOx Limit ppmv @ 3% O_2 (lb/MMBtu)**		**CO Limit ppmv @ 3% O_2 (lb/MMBtu)**
	Effective (see Section 401)		
	Process Temperature		
	< 500 °F	≥ 500 °F	
Cooking Unit	40 (0.049)	60 (0.073)	800 (0.60)

303 **EQUIPMENT REQUIREMENT – FUEL CONSUMPTION:**

303.1 The owner or operator of any unit demonstrating compliance with an emission limit of Sections 301 or 302 expressed as pounds per million Btu must install and maintain in service a non-resetting, totalizing fuel meter for each fuel prior to the compliance demonstration. The owner or operator of any unit with a combustion system that operates at only one firing rate who is demonstrating compliance with an emission limit expressed as pounds per million Btu must install and maintain in service a non-resetting, totalizing time or fuel meter for each fuel.

303.2 The owner or operator of any unit exempt from the NOx and CO emission limits in

Sections 301 or 302 pursuant to Section 115 must comply with one of the following conditions:

a. Install and maintain in service a non-resetting, totalizing fuel meter in the fuel line for each fuel burned. Each unit serviced by the fuel line must have a meter installed to monitor fuel consumption; or

b. Install and maintain in service a non-resetting, totalizing hour meter. This requirement applies to each unit relying on an hour meter to estimate fuel usage. In this case, the fuel usage must be calculated by multiplying the number of operating hours for the unit by the rated heat input capacity for the unit; or

c. Install and maintain in service a computerized tracking system that maintains a continuous daily record of hours of operation and/or fuel consumption rate. If only hours of operation are recorded, the fuel usage must be calculated by multiplying the number of operating hours for the unit by the rated heat input capacity for the unit. If both hours of operation and fuel consumption rate are recorded, the actual recorded fuel consumption rate must be integrated over the actual number of hours operated to determine total fuel usage.

303.3 Meters that require electric power to operate must be provided a permanent supply of electric power that cannot be unplugged, switched off, or reset except by the main power supply circuit for the building and associated equipment or the unit's safety shut-off switch. Any person operating any unit subject to this rule may not shut off electric power to a unit meter unless the unit is not operating and is shut down for maintenance or safety.

304 **EQUIPMENT REQUIREMENT – MAINTENANCE:** The owner or operator of any unit subject to this rule must perform combustion system maintenance in accordance with the manufacturer's schedule and specifications as identified in the manual or other written materials supplied by the manufacturer, distributor, installer, or maintenance company. Records of maintenance must be maintained as provided in Section 502.1.

400 ADMINISTRATIVE REQUIREMENTS

401 **COMPLIANCE SCHEDULE:** Except as provided in Sections 115 and 402, an owner or operator of any unit subject to Section 301 or 302 must demonstrate compliance with this rule by the following dates.

401.1 For any unit located at a major stationary source of NOx:

a. Unit installed after July 26, 2018: within 60 days after initial operation.

b. Unit installed on or before July 26, 2018: October 26, 2018.

401.2 For any unit not located at a major stationary source of NOx:

a. Unit installed after October 25, 2018: within 60 days after initial operation.

b. Unit installed on or before October 25, 2018: in accordance with the schedule in Table 3.

TABLE 3: COMPLIANCE SCHEDULE

Number of units subject to Sections 301 or 302	Number of these units required to be in full compliance by October 25, 2019	Number of these units required to be in full compliance by October 25, 2020	Number of these units required to be in full compliance by October 25, 2021
1 or 2	1	2	N/A
3 or more	1	2	All

Note: Full Compliance identifies the date by which the owner or operator must demonstrate that each unit is in compliance with this rule.

402 **LOSS OF EXEMPTION – LOW FUEL USAGE:** Effective January 1, 2019 for any unit that loses its exemption pursuant to Section 115.2, the owner or operator must conduct an initial source test and demonstrate compliance with the requirements of Section 301 or 302 within one year from the end of the calendar year in which the unit first did not meet the requirements for exemption in Section 115. The unit subsequently will not qualify for exemption pursuant to Section 115.

403 **SOURCE TESTING FREQUENCY:** Except as provided in Sections 115 and 402, the owner or operator of any unit subject to the emissions limits set forth in Section 301 or 302 must perform emission source testing using the test methods specified in Section 501 of this rule according to the following schedule and maintain records as provided in Section 502:

403.1 **Initial source test:** An initial source test to verify compliance on or before the applicable compliance date specified in Section 401.

403.2 **Periodic source testing:** A periodic emissions source test once every second calendar year after the initial source test.

403.3 Any unit that is equipped with a continuous emissions monitoring system (CEMS) must conduct accuracy testing using the methods specified in Section 501 of this rule once every calendar year.

404 **SOURCE TESTING PROTOCOL:** At least 30 days prior to the scheduled source test date, the owner or operator of any unit subject to this rule must submit a source test plan to the Air Pollution Control Officer. At least seven days prior to the source test date, the owner or operator must notify the Air Pollution Control Officer of the exact date and time of the source test. A final source test report, and the applicable source test observation and evaluation fee as authorized under Rule 301, must be submitted to the Air Pollution Control Officer within 60 days following the actual source test date.

500 MONITORING AND RECORDKEEPING

501 **TEST METHODS**

501.1. **GASEOUS EMISSIONS – SOURCE TEST:**

a. Compliance with the NOx and CO emission requirements and the stack oxygen requirements in Section 301 or 302 must be determined using the test methods specified below. All emissions determinations must be made in the as-found operating condition, except no compliance determination may be established during unit startup as defined in Section 227, or shutdown as defined in Section 225. Tests must be conducted while the unit is operating at a firing rate that is as close as physically possible to the unit's rated heat input capacity. Tests must be conducted for three 40-minute runs. The Air Pollution Control Officer may grant written approval to conduct shorter test periods if the owner or operator demonstrates that the design of the unit prevents operation for 40 consecutive minutes. Results must be averaged over the three test periods.

1. Oxides of Nitrogen – ARB Method 100 or EPA Method 7E.
2. Carbon Monoxide – ARB Method 100 or EPA Method 10.
3. Stack Gas Oxygen – ARB Method 100 or EPA Method 3A.
4. Any alternative source test method considered equivalent and that has been approved before the test in writing by the Air Pollution Control Officer, the California Air Resources Board, and the United States Environmental Protection Agency.

b. A scheduled source test may not be discontinued solely due to the failure of one or more runs to meet applicable standards.

c. In the event that a sample is accidently lost or conditions occur in which one of the three runs must be discontinued because of one of the following reasons, then compliance may be determined using the average of the other two runs:

1. Forced shutdown;

2. Failure of an irreplaceable portion of the sampling train;
3. Extreme meteorological conditions presenting a hazard to the sampling team; or
4. Other circumstances beyond the owner's or operator's control as determined by the Air Pollution Control Officer.

d. A source test not conducted pursuant to the source test methods listed in Section 501.1a may be rejected and the test report determined to be invalid.

501.2 **COMPLIANCE CALCULATION USING POUNDS PER MILLION BTU:** For any owner or operator who chooses to comply with the emission limits in Section 301 or 302 using pounds per million Btu, NOx and CO emissions in pounds per million Btu of heat input must be calculated using the procedures in EPA Method 19.

501.3 **GASEOUS EMISSIONS: CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS):** Compliance with NOx and CO emission requirements specified in Section 301 or 302 may also be determined using CEMS. All emissions determinations must be made in the as-found operating condition, except no compliance determination may be established during unit startup as defined in Section 227, or shutdown as defined in Section 225. Where the unit(s) are equipped with CEMS:

a. **General:** All CEMS must be installed according to the procedures specified in 40 CFR 60.13g. All CEMS must be installed such that a representative measurement of emissions is obtained. Additional procedures for the location of CEMS found in 40 CFR 60, Appendix B must be used. The data recorder for CEMS must be in operation at all times the unit is operated.

b. **Cycle time:** The owner or operator of any unit using CEMS must ensure that the CEMS system completes a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15 minute period.

c. **Calibration:** Zero and span must be checked once every 24 hours. The CEMS must be calibrated in accordance with the manufacturer's specifications.

d. **Averaging:** The data recorded during periods of calibration checks, zero and span adjustments must not be included in averaging for compliance determinations. Compliance must be determined on an hourly basis using the average of the three previous 1-hour average emissions concentrations. The 1-hour average emissions concentration must be determined from at least two data points recorded by the CEMS.

e. **Accuracy Testing:** Accuracy testing of CEMS must be conducted using a relative accuracy test audit pursuant to 40 CFR 60, Appendix F.

501.4 **HIGHER HEATING VALUE:** HHV must be determined by one of the following test methods:

a. ASTM D240-02 or ASTM D3282-98 for liquid hydrocarbon fuels; or

b. ASTM D1826-94, or ASTM D1945-03 in conjunction with ASTM D3588-98 for gaseous fuels; or

c. Any alternative test method considered equivalent and that has been approved before the test in writing by the Air Pollution Control Officer, the California Air Resources Board, and the United States Environmental Protection Agency.

501.5 **MULTIPLE TEST METHODS:** When more than one test method or set of test methods is specified for any testing, a violation of any requirement of this rule established by any one of the specified test methods or set of test methods will constitute a violation of this rule.

502 **RECORDKEEPING**

502.1 The owner or operator of any unit subject to the requirements of Section 304 must maintain on-site records of maintenance and a copy of the manufacturer's maintenance schedule and specifications in a manual or other written materials

supplied by the manufacturer, distributor, installer, or maintenance company.

502.2 The owner or operator of any unit exempt pursuant to Section 115 and subject to the requirements of Section 303.2 for fuel usage must record, for each unit, the calendar year gaseous and non-gaseous fuel usage, the HHV of each fuel used, and the total therms of fuel used in the calendar year.

502.3 The owner or operator of any unit exempt pursuant to Section 115 and subject to the requirements of Section 303.2 for hours of operation must record, for each unit, the calendar year hours of operation, and the calendar year calculated therms of fuel used.

502.4 The owner or operator of any unit subject to Section 501 must keep copies of all CEMS data and final source test reports as applicable.

502.5 Records must be maintained on site for a continuous 5-year period and made available for review by the Air Pollution Control Officer upon request.

The Sacramento Bee

P.O. Box 15779 • 2100 Q Street • Sacramento, CA 95852

SACRAMENTO METROPOLITAN AIR (QUALITY MANAGEMENT DISTRICT)
777 12TH STREET, 3RD FLOOR
SACRAMENTO, CA 95814

DECLARATION OF PUBLICATION
(C.C.P. 2015.5)

COUNTY OF SACRAMENTO
STATE OF CALIFORNIA

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above entitled matter. I am the printer and principal clerk of the publisher of The Sacramento Bee, printed and published in the City of Sacramento, County of Sacramento, State of California, daily, for which said newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Sacramento, State of California, under the date of September 26, 1994, Action No. 379071; that the notice of which the annexed is a printed copy, has been published in each issue thereof and not in any supplement thereof on the following dates, to wit: **9/24/18**

I certify (or declare) under penalty of perjury that the foregoing is true and correct and that this declaration was executed at Sacramento, California, on **9/24/18**

(Signature)

NO. 389 Public notice

NOTICE OF PUBLIC HEARING
SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Proposed Amendments to Rule 414 – Water Heaters, Boilers, and Process Heaters Rated Less Than 1,000,000 Btu per Hour

and

Proposed Amendments to Rule 419 – NOx from Miscellaneous Combustion Units

The Board of Directors of the Sacramento Metropolitan Air Quality Management District (SMAQMD) will conduct a public hearing on October 25, 2018 at 9:00 a.m. in Room 1450 (Board of Supervisors' Chambers), County Administration Building, 700 H Street, Sacramento, CA 95814.

The Board of Directors will consider the adoption of amendments to Rule 414 – Water Heaters, Boilers, and Process Heaters Rated Less Than 1,000,000 Btu per Hour and Rule 419 – NOx from Miscellaneous Combustion Units. If approved, both rules will be submitted to the U.S. Environmental Protection Agency to be included in the State Implementation Plan (SIP). This notice, the public hearing, and the proposed adoption are intended to satisfy the requirements of the federal Clean Air Act Section 110 and Title 40 of the Code of Federal Regulations Part 51.

Rule 414 limits nitrogen oxides (NOx) emissions from water heaters, boilers, and process heaters rated less than 1,000,000 BTU per hour. The proposed amendments to Rule 414 will exempt hot water pressure washers from the emissions requirements, consistent with other California air district rules. Diesel-fired hot water pressure washers will continue to be subject to SMAQMD's permit requirements.

Rule 419 limits NOx emissions from miscellaneous combustion units with a total heat input rating of 2,000,000 BTU per hour or greater when located at a major stationary source of NOx. The proposed amendments to Rule 419 will modify the applicability to include miscellaneous combustion units with a rated heat input of 5 million Btu per hour or greater that are not regulated under other SMAQMD rules and regulations, including asphalt plants, cooking units, crematories, dehydrators, dryers, furnaces, heaters, incinerators, kilns, ovens, and roasters.

Copies of this notice, the proposed rules and the Statement of Reasons are posted on the SMAQMD website (www.airquality.org). A paper copy of the materials can be viewed at the SMAQMD office or purchased for a cost of 25¢ per page plus mailing costs.

By this notice, all interested parties are specifically requested to provide comments on the proposed amendments to Rules 414 and 419. You may submit your comments by mail to the Sacramento Metropolitan AQMD, 777 12th Street, 3rd Floor, Sacramento, CA 95814, Attention: Marc Cooley (916) 874-4846, by fax to (916) 874-4899, or by e-mail to mcooley@airquality.org. Oral testimony may be directed to the Board of Directors at the public hearing.

SACRAMENTO METROPOLITAN
AIR QUALITY MANAGEMENT DISTRICT

STATEMENT OF REASONS

Rule 414, WATER HEATERS, BOILERS AND PROCESS HEATERS RATED LESS THAN 1,000,000 BTU PER HOUR, and

Rule 419, NOx FROM MISCELLANEOUS COMBUSTION UNITS

Proposed Amendments
September 24, 2018

Prepared by: Marc Cooley
Associate Air Quality Engineer

Reviewed by: Kevin J. Williams, Ph.D.
Program Supervisor

Approved by: Mark Loutzenhiser
Division Manager

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RULE JUSTIFICATION

Health Impacts

Ground level ozone is a secondary pollutant formed from photochemical reactions of nitrogen oxides (NOx) and volatile organic compounds (VOC) in the presence of sunlight. Ozone is a strong irritant that adversely affects human health and damages crops and other environmental resources. As documented by the U.S. Environmental Protection Agency (EPA) in the most recent science assessment for ozone[1], both short-term and long-term exposure to ozone can irritate and damage the human respiratory system, resulting in:

- reproductive and developmental effects, such as low birth weight from long to exposure to ozone;
- decreased lung function;
- development and aggravation of asthma;
- increased risk of cardiovascular problems such as heart attacks and strokes;
- central nervous system affects, such as memory and sleep patterns;
- increased hospitalizations and emergency room visits; and
- premature deaths.

The District is currently designated as a nonattainment area for both the state and federal ozone standards. Since NOx is a precursor to ozone, one of the strategies to control ozone pollution is to reduce NOx emissions from existing stationary sources. The summer season NOx emissions from miscellaneous combustion units are estimated to be 0.5415 tons per day for 2018 in Sacramento County[2].

The District is also designated as a nonattainment area for the federal health standards for PM2.5[3] and state PM10 health standards[4]. Since NOx is a precursor to PM2.5 and PM10, one of the strategies to control particulate concentrations is to reduce NOx emissions.

Health studies reviewed by the U.S. Environmental Protection Agency (EPA) have linked exposure to particulate matter, especially fine particles, to several significant health problems, including:

- increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing;
- decreased lung function;
- aggravated asthma;

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[1] "Integrated Science Assessment for Ozone and Related Photochemical Oxidants," U.S. EPA, February 2013, Table 2-1.

[2] "CPAM: California 2016 Ozone SIP Baseline Emission Projections – Version 1.04, Sacramento Nonattainment Area Tool." California Air Resources Board (CARB). June 24, 2016

[3] In 2017, EPA found that the District attained the 2006 24 hour PM2.5 NAAQS by the attainment date of December 31, 2015 (82 FR 21711). However, EPA has not yet redesignated the area to attainment, pending submission and EPA approval of a Maintenance/Implementation Plan and Redesignation Request.

[4] Title 17, California Code of Regulations, Section 60205.

- development of chronic bronchitis;
- irregular heartbeat;
- nonfatal heart attacks,
- premature death in people with heart or lung disease; and
- increased risk of cardiovascular and cerebrovascular events in post-menopausal women.

Background – Rule 414

Rule 414, Water Heaters, Boilers and Process Heaters Rated Less than 1,000,000 BTU Per Hour, applies to any person who manufactures, distributes, offers for sale, sells, or installs any type of water heater, boiler or process heater with a rated heat input capacity less than 1,000,000 British thermal units per hour (Btu/hr), fired with gaseous or nongaseous fuels, for use in the District. Although hot water pressure washers are subject to the requirements of Rule 414, these units were not considered when Rule 414 was adopted and subsequently amended. Hot water pressure washers are used to clean and degrease machinery, vehicles, works surfaces, and floors. The San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) staff report for Rule 4308 noted that, "hot water pressure washers are typically used for a few hours a day and are equipped with trigger guns to stop the flow of water when not needed and limit heating and fuel burning[5]".

Staff is proposing to amend Rule 414 to exempt diesel-fired hot water pressure washers from the rule requirements, consistent with SJVUAPCD. The South Coast Air Quality Management District (SCAQMD) also exempts these units if they are diesel fired and have maximum rated heat inputs of 550,000 MMBtu/hr or less. Staff is proposing to exempt all hot water pressure washers from the Rule 414. Hot water pressure washers of 1 MMBtu/hr or greater, whether diesel or gaseous fuel-fired, would continue to be subject to Rule 411 – Rule 411 NOx from Boilers, Process Heaters and Steam Generators. In addition, diesel fired hot water pressure washers of all sizes and gaseous fuel-fired hot water pressure washers of 1 MMBtu/hr or greater would continue to be subject to the permitting requirements of Rule 201 – General Permit Requirements and Rule 202 – New Source Review, including Best Available Control Technology (BACT) where applicable.

Background – Rule 419

There are several District Regulation 4 prohibitory rules that limit NOx emissions from specific combustion units, such as boilers, turbines, and internal combustion engines. However, prior to the adoption of Rule 419, NOx from Miscellaneous Combustion Units, on July 26, 2018, there were several types of miscellaneous combustion equipment for which NOx emissions were not limited by District rules. These units include asphalt plants, cooking units, crematories, dehydrators, dryers, furnaces, heaters, incinerators, kilns, ovens, and roasters. The adoption of Rule 419 established emission limits for some of these equipment types.

The current version of Rule 419 applies only to dehydrators, dryers, kilns, and ovens with a total rated heat input capacity of 2 million Btu per hour or greater that are located at a major stationary source of NOx. The rule was adopted to meet a U.S. EPA deadline to implement Reasonably

[5] "Final Draft Staff Report: Rule 4308 – Proposed Amendments to Rule 4308 (Boilers, Steam Generators, and Process Heaters – 0.75 MMBtu/hr to less than 2.0 MMBtu/hr." SJVUAPCD. November 14, 2013. pp. 7-8.

Available Control Technology for major stationary sources of NOx. An earlier proposal for Rule 419, presented at a public workshop on June 5, 2018, would have applied to all stationary sources and additional equipment types; however, to meet the EPA deadline, those portions of the proposal were deferred for future amendments.

Staff is now proposing to amend Rule 419 to expand the rule applicability to miscellaneous combustion units and cooking units with a total rated heat input of 5 MMBtu/hr or greater that are not located at a major stationary source of NOx. In addition, emission limits for asphalt plants, cooking units, crematories, furnaces, incinerators, and roasters are proposed. The amendments rule will require owners or operators of subject units to demonstrate compliance within 12 months after the date of adoption, with additional compliance time provided for sources with multiple units.

The proposed standards have been shown to be feasible in the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD), the South Coast Air Quality Management District (SCAQMD), and the Ventura County Air Pollution Control District (VCAPCD).

Legal Mandates

Federal Mandates: The District is designated as a "severe" nonattainment area for the 2008 federal 8-hour ozone standard. In 2017, the districts of the Sacramento Federal Nonattainment Area adopted an attainment demonstration plan to achieve the federal 8-hour ozone standard by the attainment date of July 2027[6]. Although the amendments to Rule 419 were not included as a plan commitment, the reductions in NOx emissions will help the Sacramento area make progress to attain the federal 8-hour ozone standard

The District is designated nonattainment for the federal 24-hour PM2.5 standard. Although EPA has found that the District has attained the standard[7], submission and EPA approval of a maintenance/implementation plan will be required before the District is redesignated to attainment. The NOx reductions achieved by Rule 419 will help maintain attainment with the PM2.5 standard because NOx is a precursor to PM2.5.

State Mandates: The District is designated "serious" nonattainment for the state ozone standard. The California Clean Air Act requires areas with this designation to adopt certain control measures, including:

- California Health and Safety Code (CHSC) Section 40919 requires districts designated serious nonattainment for ozone to adopt Best Available Retrofit Control Technology (BARCT) for all existing permitted sources. BARCT means an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of sources[8].

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[6] "Sacramento Regional 2008 NAAQS 8-hour Ozone Attainment and Reasonable Further Progress Plan." El Dorado County Air Quality Management District (AQMD), Feather River AQMD, Placer County Air Pollution Control District (APCD), SMAQMD, Yolo Solano AQMD, July 24, 2017.

[7] 78 FR 42018, August 14, 2013.

[8] CHSC §40406.

- CHSC Section 40914 requires a district to adopt “all feasible measures” if it is unable to achieve at least a 5% annual reduction in district wide emissions. The District’s 2015 Triennial Report and Air Quality Plan Revision[9] included a commitment to achieve NOx emission reductions from this category.
- Transport Mitigation Emission Control Requirements: Title 17, Section 70600 of the California Code of Regulations requires that districts within the areas of origin of transported air pollutants, as identified in Section 70500(c), include sufficient emission control measures (including “all feasible measures" and BARCT) in their attainment plans for ozone to mitigate the impact of pollution sources within their jurisdictions on ozone concentrations in downwind areas commensurate with the level of contribution. An upwind district must comply with the transport mitigation planning and implementation requirements set forth in this section regardless of its attainment status, unless the upwind district complies with the requirements of Section 70601[10].

The proposed emission limits in Rule 419 are equivalent to those currently in effect for similar sized equipment in SJVUAPCD, SCAQMD, and VCAPCD. Although the SCAQMD emission limits apply to smaller units than Rule 419, Staff considers the limits for small units (less than 5 MMBtu/hr) to be beyond BARCT at this time. The proposed amendments to Rule 419 will meet the “all feasible control measures” and BARCT requirements.

Other District’s Regulations – Rule 414

The proposed exemption for hot water pressure washer in Rule 414 has been adopted SCAQMD (Rule 219) and SJVUAPCD (Rule 4308). Both of these districts have adopted an exemption for hot water pressure washers.

SJVUAPCD Rule 4308 – Boilers, Steam Generators, and Process Heaters - 0.075 MMBtu/hr to less than 2.0 MMBtu/hr exempts all hot water pressure washers. Diesel fuel-fired hot water pressure washers in SJVUAPCD continue to require a permit to operate which may trigger BACT requirements.

SCAQMD Rule 219 – Equipment Not Requiring a Written Permit Pursuant to Regulation II exempts from permitting requirements diesel fired hot water pressure washers with a maximum rated heat input of 550,000 Btu/hr or less and a maximum daily fuel usage of 50 gallons of fuel per day.

Other District’s Regulations – Rule 419

Rules with NOx and CO emissions standards similar to amended Rule 419 have been adopted by SCAQMD (Rule 1147), SCAQMD Rule 1153.1, SJVUAPCD (Rule 4309), and VCAPCD (Rule 74.34).

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[9] “Triennial Report and Air Quality Plan Revision.” SMAQMD, May 28, 2015.

[10] The district must prepare a transport mitigation plan that shows the emissions from the source do not contribute to ozone violations in any downwind area, emission reductions from the sources are not needed to attain an ozone standard in any downwind area, the district is implementing an alternative emissions reduction strategy, or the most recent transport assessment shows that the transport impact is inconsequential.

SJVUAPCD Rule 4309 – Dryers, Dehydrators, and Ovens

SJVUAPCD Rule 4309 was adopted in December 2005 and applies to units that have a total rated heat input of 5 MMBtu/hr or greater. The rule sets NOx and CO emission limits for gaseous and liquid fueled dryers, dehydrators, and ovens. The emission standards are shown in Table 1. NOx and CO concentration limits in Rule 4309 are given at 19% O_2. Table 1 also shows the equivalent concentrations at 3% O_2 so that they can be compared to Rule 419.

TABLE 1: SJVUAPCD Rule 4309 NOx and CO Limits

Equipment Category	**NOx Emission Limit ppmv @ 19% O_2 (ppmv @ 3% O_2)**		**CO Emission Limit ppmv @ 19% O_2 (ppmv @ 3% O_2)**	
	Gaseous Fuel Fired	Liquid Fuel Fired	Gaseous Fuel Fired	Liquid Fuel Fired
Asphalt Manufacturing Operation	4.3 (~40)	12.0 (~110)	42 (~390)	64 (~590)
Milk, Cheese, and Dairy Processing < 20 MMBtu/hr	3.5 (~32)	3.5 (~32)	42 (~390)	42 (~390)
Milk, Cheese, and Dairy Processing ≥ 20 MMBtu/hr	5.3 (~49)	5.3 (~49)	42 (~390)	42 (~390)
Other processes (dryers, dehydrators, or ovens) not described above	4.3 (~40)	4.3 (~40)	42 (~390)	42 (~390)

SCAQMD Rule 1147 – NOx Reductions from Miscellaneous Sources

SCAQMD Rule 1147, last amended in July 2017, applies to all permitted units regardless of the size of the equipment, but an exemption is provided for small units operating for a limited number of hours. The rule regulates NOx emissions from gaseous and liquid fueled combustion equipment that is subject to permit but is not subject to emission standards under any other SCAQMD rule. The emission standards are shown in Table 2.

TABLE 2: SCAQMD Rule 1147 NOx Limits

Equipment Category	**NOx Limit ppmv @ 3% O_2 (lb/MMBtu)**		
	Process Temperature		
	≤ 800 °F	> 800 °F & < 1200 °F	≥ 1200 °F
Asphalt Manufacturing Operation	40	40	-
Afterburner, Degassing Unit, Remediation Unit, Thermal Oxidizer, Catalytic Oxidizer, or Vapor Incinerator[1]	60 (0.073)	60 (0.073)	60 (0.073)
Crematory or Incinerator	60 (0.073)	60 (0.073)	60 (0.073)
Dual- or Multi-Chamber Burn-off Furnace, Burnout Oven, Incinerator or Crematory with Integrated Afterburner	60 (0.073)	60 (0.073)	60 (0.073)

TABLE 2: SCAQMD Rule 1147 NOx Limits

Equipment Category	NOx Limit ppmv @ 3% O_2 (lb/MMBtu)		
	Process Temperature		
	≤ 800 °F	> 800 °F & < 1200 °F	≥ 1200 °F
Evaporator, Fryer, Heated Process Tank, or Parts Washer	60 (0.073)	60 (0.073)	-
Metal Heat Treating, Metal Melting Furnace, Metal Pot, Tar Pot	60 (0.073)	60 (0.073)	60 (0.073)
Oven, Dehydrator, Dryer, Heater, Kiln, Calciner, Cooker, Roaster, Furnace, or Heated Storage Tank	30 (0.036)	30 (0.036)	60 (0.073)
Make-Up Air Heater or other Air Heater located outside of building with temperature controlled zone inside building	30 (0.036)	-	-
Tenter Frame or Fabric or Carpet Dryer	30 (0.036)	-	-
Other unit or process temperature	30 (0.036)	30 (0.036)	30 (0.036)
All liquid fuel-fired units	40 (0.053)	40 (0.053)	60 (0.080)

1 Emission limit applies to burners fueled by 100% natural gas that are used to incinerate air toxics, VOCs, or other vapors; or to heat a unit. The emission limit applies solely when burning 100% fuel and not when the burner is incinerating air toxics, VOCs, or other vapors. The unit must be tested or certified to meet emission limit while fueled with natural gas.

SCAQMD Rule 1153.1 – Emissions of Oxides of Nitrogen from Commercial Food Ovens

SCAQMD Rule 1153.1 regulates NOx emissions from in-use[11] gaseous and liquid fueled combustion equipment permitted with the district and used to heat, cook, dry or prepare food or products for making beverages for human consumption. Rule 1153.1 is applicable only to permitted cooking units whose combustion emissions are not regulated under any other district prohibitory rule. The emission standards of SCAQMD Rule 1153.1 are shown in Table 3.

[11] In-use units are units that are in operation prior to the proposed effective date of Rule 1153.1. After the effective date, new, relocated, or modified cooking units are subject to the limits of Rule 1147.

TABLE 3: SCAQMD Rule 1153.1 NOx limits			
Equipment Category	**NOx Limit ppmv @ 3% O_2 (lb/MMBtu)**		**CO Limit ppmv @ 3% O_2**
	Process Temperature		Effective 1/1/2016
	≤ 500 °F	> 500 °F	
In-use Cooking Unit	40 (0.042)	60 (0.073)	800

VCAPCD Rule 74.34 – NOx Reductions from Miscellaneous Sources

VCAPCD Rule 74.34 regulates NOx and CO emissions from dryers, furnaces, heaters, incinerators, kilns, ovens, and duct burners. The rule was adopted in December 2016 with an effective date of July 1, 2018. VCAPCD adopted Rule 74.34 as an "all feasible measure" to help attain the state ambient air quality standards. The rule applies to units with a total rated heat input of 5 MMBtu/hr or greater. The NOx emission standards of Rule 74.34 are shown in Table 3. CO emissions from any unit subject to this rule may not exceed 400 ppmv at 3% O_2 (0.30 lb/MMBtu heat input)

TABLE 3: VCAPCD Rule 74.34 NOx limits		
Equipment Category	**NOx Limit ppmv @ 3% O_2 (lb/MMBtu)**	
Asphalt Manufacturing (Dryer)	40 (0.048)	
Sand and Gravel Processing (Dryers)	40 (0.048)	
Paper Products Manufacturing (Hot Air Furnace, Duct Burner, Paper Dryer)	40 (0.048)	
Metal Heat Treating/Metal Melting Furnace	60 (0.072)	
Kiln	80 (0.096)	
Equipment Category	**Process Temp < 1200 °F**	**Process Temp ≥ 1200 °F**
Oven, Dryer (besides asphalt, sand, or paper dryer), Heater, Incinerator, Other Furnaces, or Other Duct Burner (Not Listed Above)	30 (0.036)	60 (0.072)

Comparison with Proposed Rule 419

Table 4 compares the emission limits for units subject to proposed Rule 419 with the corresponding limits for the same equipment types in the other districts' rules.

TABLE 4: Comparison of Proposed Rule 419 With Other Districts' Rules
(Emission Limits in ppmv @ 3% O_2)

Proposed Amended Rule 419		**SJVUAPCD Rule 4309**		**SCAQMD Rule 1147 or SCAQMD Rule 1153.1**		**VCAPCD Rule 74.34**	
Crematories, Dehydrators, Dryers, Furnaces, Heaters, Incinerators, Kilns, Ovens, Roasters, or Other Combustion Equipment not required to comply with requirements of other District Regulation 4 – Prohibitory Rules		Processes (Dryers, Dehydrators, or Ovens)		Dryers, Dehydrators, Heaters, Kilns, Calciners, Furnaces, Crematories, Incinerators, Heated Pots, Cookers, Roasters, Fryers, Heated Tanks and Evaporators, Distillation Units, Afterburners, Degassing units, Vapor Incinerators, Catalytic or Thermal oxidizers and other Air Pollution Control Devices		Dryers, Furnaces, Heaters, Incinerators, Kilns, Ovens, and Duct Burners	
NOx	CO	NOx	CO	NOx	CO	NOx	CO
Asphalt Manufacturing							
40	400	Gaseous Fuel: ~40 Liquid Fuel: ~110	Gaseous Fuel: ~400 Liquid Fuel: ~600	40	No Limit	40	400
Crematory, Incinerator, Metal Heat Treating/Metal Melting Furnace							
60	400	Rule not applicable	Rule not applicable	60	No Limit	60	400
Soybean Roaster							
45 (< 1200 °F); 60 (≥ 1200 °F)	No Limit	~40	~400	40 (< 500 °F); 60 (≥ 500 °F)	800	30 (< 1200 °F); 60 (≥ 1200 °F)	400
Cooking Units							
40 (< 500 °F); 60 (≥ 500 °F)	400	~32	~400	In-use units: 40 (< 500 °F); 60 (≥ 500 °F)	In-use units: 800	30 (< 1200 °F); 60 (≥ 1200 °F)	400
All Other Units							
Gaseous Fuel 30 (< 1200 °F); 60 (≥ 1200 °F) Liquid Fuel 40 (< 1200 °F); 60 (≥ 1200 °F)	400	~40	~400	Gaseous Fuel 30 (< 1200 °F); 60 (≥ 1200 °F) Liquid Fuel 40 (< 1200 °F); 60 (≥ 1200 °F)	No Limit	30 (< 1200 °F); 60 (≥ 1200 °F)	400
						Paper Products Manufacturing	
						NOx	CO
						40	400

As shown in Table 4, the NOx limits in proposed amended Rule 419 similar to the surrounding areas. A more emissive emission limit is established for soybean roasters, which require the roasting grain feedstock to come into direct contact with the burner flame. Information provided by the burner manufacturer stated that, under the direct contact conditions, the burners cannot achieve the lower NOx emissions limits proposed for other types of roasters.

The applicability of the proposed amendments to Rule 419 is similar to VCAPCD but less restrictive than SCAQMD. The SJVUAPCD Rule 4309 applicability is more limited in scope than the other rules because is the rule applies only to dryers, dehydrators, and ovens.

Availability of Compliant Equipment

NOx from combustion is created through three processes[12]. "Thermal NOx" forms when molecular nitrogen and oxygen from the air react at high temperatures. "Fuel NOx" is formed from the oxidation of nitrogen compounds in the fuel. "Prompt NOx" is formed first from the reaction of molecular nitrogen from the air with the fuel under fuel-rich conditions, then through subsequent oxidation of these nitrogen compounds.

NOx formation varies in the combustion process depending on the air-to-fuel ratio, nitrogen content of the fuel, flame temperature, and residence time. The primary method for units to meet the emission limits is through the use of low-NOx burners. Low-NOx burners reduce NOx formation using air-to-fuel ratio control, premix burners[13], flue gas recirculation, staged combustion, or radiant burners[14].

Units subject to proposed Rule 419 will be able to comply by replacing the existing burners with low-NOx burners or by replacing existing units with low-NOx units. Low-NOx burners have been available for over a decade, and for some types of equipment for nearly two decades. The use of low-NOx burners is well established and low-NOx burners are already required in the District for other types of combustion units, such as boilers, water heaters, and process heaters.

BACT determinations for the equipment subject to Rule 419 date back ten to 20 years in some cases. For example, the proposed NOx emission limit for asphaltic concrete production has been in effect since the adoption of Rule 4309 in SJVUAPCD in December 2005 and has been considered BACT in SCAQMD since 2000. Low-NOx burners for asphaltic concrete production, meeting a standard of ≤ 36 ppmv @ 3% O_2, are considered achieved in practice for District BACT purposes[15]. Low-NOx burners meeting 30 ppmv @ 3% O_2 for dryers and ovens (both direct and indirect fired) have been considered BACT in SCAQMD since 1998[16]. The District also has several BACT determinations that require units to meet or exceed the NOx emission standards proposed for Rule 419.

Although low-NOx burners have been available on the market for years, SCAQMD nonetheless examined the availability of compliant products for use on miscellaneous combustion units during

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[12] "Technical Bulletin – Nitrogen Oxides (NOx), Why and How they are Controlled." EPA. November 1999. p. 5.
[13] "Staff Report Proposed Rule 1147 – NOx Reductions from Miscellaneous Sources." SCAQMD. December 2008. pp. 1-3.
[14] "Staff Report Proposed Rule 1153.1 – Emissions of Oxides of Nitrogen from Commercial Food Ovens." SMAQMD. October 2014.
[15] SMAQMD BACT Clearinghouse. BACT Determination Number 90. November 20, 2014.
[16] BACT Guideline, Part D: BACT Guidelines for Non-Major Polluting Facilities. SCAQMD. December 2, 2016. p. 43.

adoption and amendments to Rule 1147. In 2008, SCAQMD identified several manufacturers and suppliers that produce burner models to meet the proposed limits[17]. In 2011, SCAQMD re-examined the availability of compliant equipment, and identified low-NOx burners from at least three manufacturers in each equipment category and in many of the equipment categories, additional manufacturers were identified[18]. In 2016, SCAQMD completed a technology assessment and subsequently amended Rule 1147 to incorporate recommendations from the technology assessment and address stakeholders' technical concerns[19]. The amendments[20] delayed compliance for small in-use units (< 1 lb/day of NOx emissions), changed the NOx limit from 30 ppmv to 60 ppmv for burn-off ovens, incinerators, and related equipment, and added a testing exemption for ultra-low NOx infrared burners.

Staff has incorporated some of the recommendations from the SCAQMD technology assessment into the proposed amendments to Rule 419. The assessment focused mainly on small and low emitting units but some of the recommendations are relevant to larger equipment that will become subject to amended Rule 419. The proposed amendments include a testing exemption for low-NOx infrared burners, an emissions limit of 60 ppmv NOx for incinerators and other related equipment, and a low fuel usage exemption. For more details, see the Summary of Proposed Amendments section below.

SUMMARY OF PROPOSED AMENDMENTS TO RULE 414, WATER HEATERS, BOILERS AND PROCESS HEATERS RATED LESS THAN 1,000,000 BTU PER HOUR

Staff is proposing to amend Rule 414 to exempt gaseous and liquid fuel-fired hot water pressure washers from the requirements of Rule 414. This exemption is consistent with SJVUAPCD[21] and similar to SCAQMD[22]. Natural gas-fired hot water pressure washers with a maximum heat input of 1,000,000 Btu per hour or greater[23] and diesel-fired hot water pressure washers of any size would continue to be required to obtain a District permit under Rule 201, GENERAL PERMIT REQUIREMENTS.

Staff estimates that 24 hot water pressure washers are located and operated in Sacramento County. Staff's conservative (high) estimate of NOx emission reductions that will be foregone by including an exemption for hot water pressure washers is one to three pounds per day. This loss of emission reductions will be offset by the NOx reductions achieved by proposed new Rule 419, which are estimated to be approximately nine times greater. For full details of the foregone emission reductions, see the "Emissions Impact" section.

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[17] "Staff Report Proposed Rule 1147 – NOx from Miscellaneous Sources." SCAQMD. December 2008. pp. 1-4 & 1-5.
[18] "Staff Report Proposed Rule 1147 – NOx from Miscellaneous Sources." SCAQMD. September 2011. pp. 3-8 & 3-9.
[19] "Final Staff Report Proposed Rule 1147 – NOx from Miscellaneous Sources." SCAQMD. June 2017.
[20] Ibid. p. ES-2.
[21] SJVUAPCD. Rule 4308, Boilers, Steam Generators, and Process Heaters – 0.075 MMBtu/hr to less than 2.0 MMBtu/hr. November 14, 2013. §4.3.
[22] SCAQMD. Rule 219, Equipment Not Requiring a Written Permit Pursuant to Regulation II. May 3, 2013. § (b)(4).
[23] SMAQMD. Rule 201, GENERAL PERMIT REQUIREMENTS. Amended August 26, 2006. §112.

A detailed description of the amendments to Rule 414 is included in Appendix A.

SUMMARY OF PROPOSED AMENDMENTS TO RULE 419, NOx FROM MISCELLANEOUS COMBUSTION UNITS

Staff is proposing to amend Rule 419 to reduce emissions of NOx from miscellaneous combustion units and cooking units located at non-major stationary sources of NOx. Miscellaneous combustion units include asphalt plants, crematories, dehydrators, dryers, furnaces, heaters, incinerators, kilns, ovens, roasters and other combustion equipment. Proposed amended Rule 419 will add NOx and CO emission limits for miscellaneous combustion units and cooking units with a total rated heat input capacity of 5 million Btu per hour or greater that are not located at a major stationary sources of NOx. The additional limits will also apply to miscellaneous combustion equipment and cooking units with a total heat input capacity of 2 million Btu per hour or greater that are located a major stationary source of NOx. The proposed limits are considered to be BARCT and in some cases are similar to BACT. New or modified units with increased emissions are also subject to Rule 202, NEW SOURCE REVIEW, which requires units to install BACT.

In establishing the proposed NOx and CO emission limits, Staff considered and evaluated rules in other California air districts as "all feasible measures." The applicability of proposed amended Rule 419 is consistent with VCAPCD Rule 74.34. Rule 419 applies to more types of miscellaneous combustion units than SJVUAPCD Rule 4309 but contains similar emission standards for dryers, dehydrators, and ovens. The emission limits of proposed amended Rule 419 are consistent with SCAQMD Rules 1147 and 1153.1 and VCAPCD Rule 74.34. The emission limits in SJVUAPCD for miscellaneous units of 5 MMBtu/hr and greater have been in effect in SJVUAPCD since 2007 and similar limits were adopted in VCAPCD in December of 2016.

The proposed emission standards have been shown to be feasible in SCAQMD, SJVUAPCD, and VCAPCD.

Rule Exemptions

The proposed amendment to Rule 419 contains will add new exemptions for low fuel usage units, inactive units, and infrared burners. The added exemptions are not applicable to any unit that is located at a major stationary source of NOx. The exemptions included as part of the proposal are for the following:

- Low fuel usage units are exempt from emission limits and source testing requirements if they use less than 30,000 therms per year of fuel, provided that fuel meters or hour meters are installed and records are maintained;
- Units heated solely with infrared burners are exempt from all source testing requirements (these units typical operate below 15 ppmv)[24]; and
- Units that do not operate in a calendar year when periodic source testing would otherwise be required are allowed to defer source testing until the unit resumes operation. Source testing will be required within 60 days of resuming operation.

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[24] "Final Technology Assessment for Rule 1147 Small and Low Emission Sources." SCAQMD. February 2017. p. N-2.

The owner or operator of any unit requesting a low fuel usage exemption must submit a permit application within six months after the date of adoption of amended Rule 419 and install (or have installed) and maintain a non-resetting totalizing fuel or hour meter (see Section 303.2). The owner or operator of any unit operating under the low fuel usage exemption that subsequently uses 30,000 therms or more in any calendar year, starting with calendar year 2019, will become subject to the rule emissions limits and testing requirements and will receive a notice of violation.

Source Testing Requirements

The source testing requirements for miscellaneous combustion units located at non-major stationary sources are the identical to the existing Rule 419 requirements. Sections 403 and 404 contain the source testing frequency and testing protocols for Rule 419. The owner or operator of a miscellaneous combustion unit or cooking unit is required to conduct a source test to demonstrate compliance once every second calendar year. This requirement is consistent with the existing miscellaneous combustion units that are already required to conduct source testing by permit conditions.

Acceptable source test methods are identified in Section 501. These methods include ARB Method 100, and EPA Methods 3A, 7E, 10, and 19. Alternative test methods considered equivalent and that have been approved before the test in writing by the Air Pollution Control Officer (APCO), the California Air Resources Board, and the United States Environmental Protection Agency are also acceptable. The rule requirements for source testing specify a unit should be tested in an as-found operating condition. The rule does not specify whether the units should be operating with product or without product. For example, an asphalt plant may conduct source testing using aggregate in the dryer, or with a heat-absorbing material, or with no material in the dryer. The decision to test with or without materials should be specified by the owner or operator when submitting the source test plan pursuant to section 404. The source test runs must be conducted for three 40-minute runs unless prior approval has been granted by the APCO. The APCO may grant written approval if the owner or operate demonstrates that the design of a unit prevents operation for 40 consecutive minutes.

Equipment Maintenance

Section 304 requires the owner or operator of any unit subject to Rule 419 to perform combustion system maintenance in accordance with the manufacturer's schedule and specifications as identified in the manual, or if these are not available, other written materials supplied by the manufacturer, distributor, installer, or maintenance company. Records of these maintenance activities must be maintained according to the requirements of the recordkeeping section of Rule 419.

Proposed Emission Limits

Proposed amended Rule 419 emission limits for miscellaneous combustion units are consistent with VCAPCD Rule 74.34 and are similar to SJVUAPCD Rule 4309 and SCAQMD Rules 1147. The proposed emission limits are identical to all three other Districts for asphalt plants and similar for other types of miscellaneous combustion units. Table 5 shows the proposed NOx and CO emission limits for miscellaneous combustion units.

Proposed amended Rule 419 emission limits for cooking units are consistent with SCAQMD Rule 1153.1. Table 6 shows the proposed NOx and CO emission limits for cooking units. Similar to SCAQMD Rule 1153.1, Staff is proposing higher NOx emission limits for cooking units due to their unique characteristics, as SCAQMD identified during the development of Rule 1153.1[25]. These characteristics of cooking units may be necessary to maintain similar taste, texture, appearance, and other qualities of the product.

Staff is also proposing a higher NOx limit of 45 ppmv for a specialized soybean roasting process, which requires the roasting grain feedstock to come into direct contact with the burner flame. Information provided by the burner manufacturer stated that, under the direct contact conditions, the burners cannot achieve the lower NOx emissions limits proposed for other types of roasters (included under "other miscellaneous combustion not listed above"). In addition, because the process results in incomplete combustion of the roasted product, no CO limit will be established for the soybean roaster equipment category.

TABLE 5: Miscellaneous Combustion Units NOx and CO Emission Limits

Equipment Category	**NOx Limit ppmv @ 3% O_2 (lb/MMBtu)**		**CO Limit ppmv @ 3% O_2 (lb/MMBtu)**
	Effective (see Section 401)		
	Process Temperature		
Gaseous Fuel-Fired Equipment	< 1200 °F	≥ 1200 °F	
Asphalt Manufacturing Operation	40 (0.049)	40 (0.049)	400 (0.30)
Incinerator or Crematory	60 (0.073)	60 (0.073)	400 (0.30)
Metal Heat Treating or Metal Melting Furnace	60 (0.073)	60 (0.073)	400 (0.30)
Other Furnace	30 (0.036)	60 (0.073)	400 (0.30)
Oven, Dehydrator, Dryer, Heater, or Kiln	30 (0.036)	60 (0.073)	400 (0.30)
Soybean Roaster	45 (0.055)	60 (0.073)	--
Other miscellaneous combustion unit not listed above	30 (0.036)	60 (0.073)	400 (0.30)
Liquid Fuel-Fired Equipment	< 1200 °F	≥ 1200 °F	
All miscellaneous combustion units when liquid fuel-fired	40 (0.051)	60 (0.077)	400 (0.31)

[25] "Staff Report Proposed Rule 1153.1 – Emission of Oxides of Nitrogen from Commercial Food Ovens." SCAQMD. November 7, 2014. pp.1-6 & 1-7.

TABLE 6: Cooking Units NOx and CO Emission Limits			
Equipment Category	**NOx Limit ppmv @ 3% O_2 (lb/MMBtu)**		**CO Limit ppmv @ 3% O_2 (lb/MMBtu)**
	Effective (see Section 401)		
	Process Temperature		
	< 500 °F	≥ 500 °F	
Cooking Unit	40 (0.049)	60 (0.073)	800 (0.62)

Compliance Date(s) for the Proposed Emission Limits

For all new units, the owner or operator must demonstrate compliance within 60 days after initial operation of the unit. New units are also subject to Rule 202, New Source Review, and potentially BACT requirements that will, at a minimum, meet the rule standards. Typically, BACT emission limits are lower than those limits in source specific rules.

For all units not located at a major stationary source of NOx, the rule requires owners or operators to demonstrate compliance within 12 months after the date of adoption, with additional compliance time provided for sources with multiple units subject to the rule. The compliance schedule for existing units not located at major stationary sources of NOx is shown in Table 7.

TABLE 7: Compliance Schedule			
Number of units subject to Sections 301 or 302	**Number of these units required to be in full compliance by (12 months after date of adoption)**	**Number of these units required to be in full compliance by (24 months after date of adoption)**	**Number of these units required to be in full compliance by (36 months after date of adoption)**
1 or 2	1	2	N/A
3 or more	1	2	All

Recordkeeping

Section 502 contains the recordkeeping requirements. The owner or operator of each affected unit must maintain on site records of maintenance, source testing, and a copy of the manufacturer's maintenance schedule and specifications in a manual or other written materials supplied by the manufacturer, distributor, installer, or maintenance company. Owners or operators of a unit demonstrating compliance with the low fuel usage exemption must maintain records of fuel usage or hours of operation, and annual fuel usage. Records of source testing must be kept and maintained on site by the owner or operator. The owner or operator of any unit using a continuous emissions monitor system (CEMS) must keep copies of all data relevant to the CEMS. All records must be maintained on site for a continuous 5-year period, which is consistent with other District prohibitory rules.

A detailed description of the amendments to Rule 419 is included in Appendix A.

EMISSIONS IMPACT

Proposed Amended Rule 414

The exemption of hot water pressure washers will forego a small amount of emissions reductions associated with these units. No emissions reductions from hot water pressure washers were claimed in the adoption of Rule 414 in 1996 or the amendments to Rule 414 in 2010. Emissions reductions foregone from the exemption will be offset by reductions from proposed Rule 419. Staff estimates that 24 hot water pressure washers are located and operated in Sacramento County[26]. Table 8 shows an estimate of the NOx emissions reductions from hot water pressure washers that would be foregone from the SIP due to the exemption. This conservatively high estimate assumes an annual usage of 876 hours per washer (a capacity factor of 10%) and an average hot water power washer input capacity of 300,000 Btu/hr.

TABLE 8: Estimated NOx Emissions for Hot Water Pressure Washers

Description	**Estimated NOx Emissions Reductions Foregone (tons per summer day)**
	2018
Hot Water Pressure Washers	0.0021

Proposed Amended Rule 419

Staff identified 19 permitted units, shown in Table 10, in the District that will become newly subject to proposed amended Rule 419. Of the 19 units, 8 units (4 dryers and 4 asphalt plants) should already comply with the proposed NOx emission standards based on the emissions limitations in their permit conditions, and are already subject to source testing by permit conditions. These compliant units will also be required meet all other conditions of Rule 419, including maintenance and recordkeeping, if not already required by permit conditions.

TABLE 10: Miscellaneous Unit/Cooking Unit Classification

CLASSIFICATION	**NUMBER PERMITTED**
Ovens/Dryers	7
Kilns	1
Crematories	2
Asphaltic Concrete Plants	5
Direct Fired Steam Generator (Other Miscellaneous Combustion Unit)	1
Cooking Units	2
Soybean Roaster	1
TOTAL PERMITTED MISCELLANEOUS UNITS SUBJECT TO RULE 419	19

[26] Based on the number of hot water pressure washers permitted by SCAQMD, multiplied by the ratio of the population of the District to the population of SCAQMD.

Staff conducted a survey of the identified units that would be newly subject to proposed amended Rule 419 and estimated the emission inventory and reductions attributable only to these units. Table 11 shows the estimated emissions based on actual reported fuel usage and Table 12 shows the estimated emission reductions for the rule[27]. Rule 419 is estimated to reduce NOx emissions by 5.6 tons per year (0.0179 tons per summer day).

TABLE 11: NOx Emissions Inventory for Identified Miscellaneous Combustion Units and Cooking Units Newly Subject to the Proposed Amendment to Rule 419

Description	**NOx Inventory (tons per summer day)**
Miscellaneous Combustion Units (Subject to Rule 419)	0.0723
Total	0.0723

TABLE 12: NOx Emissions Reductions for Identified Miscellaneous Combustion Units and Cooking Units Newly Subject to the Proposed Amendment to Rule 419

Description	**NOx Reductions (tons per summer day)**
Miscellaneous Combustion Units	0.0179
Total	0.0179

ECONOMIC IMPACT

Cost Impact

CHSC §40703 requires that the District consider and make public its findings relating to the cost-effectiveness of implementing an emission control measure.

The amendments to Rule 414 do not impose or implement any emissions standards. The discussion of emission impacts for costs and incremental cost-effectiveness in these sections is specific to the amendments to Rule 419.

Equipment Costs**:** Staff used cost data from the staff reports for SJVUAPCD Rule 4309 and SCAQMD Rules 1147 and 1153.1 to calculate the cost-effectiveness of the emissions reductions for the amendments to Rule 419. The average burner and installation costs were estimated by SCAQMD in the 2008 staff report for Rule 1147[28]. Staff adjusted these costs to 2017 dollars. Installation costs are assumed to be 50% of the equipment costs, consistent with past District rulemakings and SCAQMD's assumptions. Staff included additional costs for associated source

[27] Current annual emissions were obtained from the Staff survey of miscellaneous units. Using the same hours of operation or fuel usage (from the survey), annual future compliant emissions were calculated using the proposed emission standards. The difference between these values is the annual NOx emission reduction.

[28] "Staff Report Proposed Rule 1147 – NOx from Miscellaneous Sources." SCAQMD. December 2008. pp. 3-3.

testing, District source test observation fees, and permit modification fees for equipment modification or replacement when calculating the cost-effectiveness. These additional costs were not included for the four facilities that are already required to conduct source testing by permit condition. The costs for compliant burners and additional equipment (such as fans, ducting, etc.), excluding asphalt plants, depend on the size of the burner and the NOx emissions limit. The largest non-asphalt unit is approximately 28 MMBtu/hr. Table 13 identifies the estimated equipment costs by unit size and compliant NOx emissions limit. Staff annualized the costs at an interest rate of 7% and assumed an equipment useful life of 15 years.

The capital equipment costs for asphalt plants are considerably higher than the other units subject to the amendments to Rule 419. Each of the permitted asphalt plants in Sacramento County is approximately 125 MMBtu/hr. SJVUAPCD estimated total capital equipment costs, including installation costs, of an asphalt plant dryer to be $100,000 to $120,000 per unit[29]. Staff is using similar equipment costs for asphalt plants as SJVUAPCD. Adjusted to 2017 dollars, the total capital equipment costs of an asphalt plant dryer is an estimated $119,000. The breakdown by unit size category is provided in Table 13.

TABLE 13: Average Equipment Costs

Unit Size (MMBtu/hr)	Equipment Cost		Installation Cost		Total Capital Cost	
	30 ppmv	60 ppmv	30 ppmv	60 ppmv	30 ppmv	60 ppmv
2 to less than 5	$6,312	$4,017	$3,156	$2,008	$9,469	$6,025
5 to less than 10	$5,739	$5,739	$2,689	$2,869	$8,608	$8,608
10 to less than 20	$11,477	$9,182	$5,739	$4,591	$17,216	$13,772
Greater than 20	$26,397	$25,249	$13,199	$12,625	$39,596	$37,874
Asphalt Plant (40 ppmv)	$119,445		$59,723		$179,168	

Source Testing Costs: Included in the rule compliance costs are the District source test observation fee ($1,919 – See Rule 301, Section 311) and the costs for the owner or operator to hire a third party to conduct source testing ($2,500[30]). The source testing costs are distributed over the equipment lifetime (~8 total tests over the lifetime of the unit).

Of the 19 units subject to proposed amended Rule 419, five units are already required to conduct source testing by permit condition. Therefore, no additional source testing costs were assumed for these five units.

One-time Costs: Permit application fees are also included in the compliance costs for sources that may need to install new equipment to meet the emission limits. Staff estimates that five units are already compliant with the proposed emissions limits. These units and their permits do not need to be modified to meet the rule requirements.

Overall Cost-Effectiveness: Compliance costs are highly dependent on a number of characteristics including, but not limited to, burner size and type, operating temperature, and

[29] "Final Staff Report with Appendices for Revised Proposed Rule 4309." SJVUAPCD. December 15, 2005. p. C-3.
[30] Kevin J. Williams, SMAQMD, phone conversation with Regan Best, Best Environmental. March 22, 2017.

installation costs. Overall cost-effectiveness for the proposed amendments to Rule 419 is estimated to be $7.66 per pound of NOx reduced.

In comparison, previously adopted District rules have had cost-effectiveness values for emissions reductions, in 2017 dollars, ranging from $1.26 per pound of VOC reduced (for the July 2011 amendment of Rule 459, Automotive, Mobile Equipment and Associated Parts and Components Coating Operations) to as much as $16.95 per pound of NOx reduced (for the October 2005 amendment of Rule 411, NOx from Boilers, Process Heaters and Steam Generators). The cost-effectiveness of the amendments to Rule 419 may be lower than the estimate presented here if non-operational equipment is shut down, rather than retrofit, to meet the rule requirements.

Incremental Cost-Effectiveness

Pursuant to CHSC §40920.6(a)(3), the District is required to perform incremental cost-effectiveness analysis prior to adopting requirements for BARCT or a "feasible measure" requirement pursuant to CHSC §40914. The District is required to identify one or more potential control options that achieve the emission reduction objective for the regulation. The incremental cost-effectiveness is the difference in the dollar cost divided by the emissions reduction potential "between each progressively more stringent potential control option as compared to the next, less expensive control option."

A more stringent potential control option to control NOx is selective catalytic reduction (SCR). Staff examined the possibility of applying SCR for the types of equipment subject to Rule 419. Both SCAQMD[31] and SJVUAPCD[32] determined, and Staff agrees, that the feasibility of applying SCR to this equipment is not proven. SCR typically requires exhaust gas temperatures of approximately 500-700 °F to reduce NOx emissions effectively. The operational temperatures of most of the units subject to Rule 419 are below the design requirements for a functional SCR system. With no feasible, more stringent control option, an incremental cost-effectiveness determination was not performed.

Socioeconomic Impact

CHSC §40728.5 requires a district to perform an assessment of the socioeconomic impacts before adopting, amending, or repealing a rule that will significantly affect air quality or emission limitations. The District Board is required to actively consider the socioeconomic impacts of the proposal and make a good faith effort to minimize adverse socioeconomic impacts.

CHSC §40728.5 defines "socioeconomic impact" to mean the following:

1. The type of industry or business, including small business, affected by the proposed rule or rule amendments.

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[31] "Staff Report Proposed Rule 1147 – NOx from Miscellaneous Sources." SCAQMD. December 2008. pp. 3-4.

[32] "Final Staff Report with Appendices for Revised Proposed Rule 4309." SJVUAPCD. December 15, 2005. pp. 11-12.

2. The impact of the proposed rule or rule amendments on employment and the economy of the region.
3. The range of probable costs, including costs to industry or business, including small business.
4. The availability and cost-effectiveness of alternatives to the proposed rule or rule amendments.
5. The emission reduction potential of the rule or regulation.
6. The necessity of adopting, amending, or repealing the rule or regulation to attain state and federal ambient air standards.

Staff has determined that the proposed amendments to Rule 414 will not significantly affect air quality or emission limitations; therefore, a socioeconomic impact analysis for the amendments is not required. The remainder of this section discusses the socioeconomic impact for proposed amended Rule 419.

Type of industry or business, including small business affected by the proposed rule:
Proposed amended Rule 419 applies to cooking units, asphalt plants, crematories, dehydrators, dryers, furnaces, heaters, incinerators, kilns, ovens, and roasters. There are 19 permitted miscellaneous combustion units in the District that will become newly subject to proposed amended Rule 419. These units are located at larger businesses, such as asphalt plants, and manufacturing facilities that produce products such as bricks, commercial food, carbon fiber, and bagged concrete. They are used in various applications, including manufacturing, heating and drying of materials, incineration, and commercial food cooking.

Impact on employment and economy in the District of the proposed rule:
Nineteen miscellaneous combustion units will become newly subject to the rule's emission standards. Based on current information, Staff estimates that seven units are compliant with the proposed NOx emission limits based on permit conditions and twelve non-compliant units will require retrofit or replacement. The number of units required to make changes may be less than 12 units if owners or operators of units with newer burners are able to demonstrate, through source testing, compliance with the emission standards. A few owners or operators may apply for the low usage exemption and limit their fuel usage through a permit modification. Four companies in the District subject to the rule have multiple miscellaneous combustion units and will be able to use the phased-in compliance schedule.

The total annual cost for compliance with the rule in Sacramento County is approximately $86,000 per year using a 15-year period and 7% interest rate to annualize initial costs. This includes the costs for retrofitting/replacing existing units (including installation costs), source testing, and permit fees. Currently, there are no companies in Sacramento County that manufacture low-NOx burners. The supporting work (source testing, maintenance, and installation) may lead to an increase in revenue if performed by local businesses.

Eastern Research Group (ERG), under contract with the District, performed an economic analysis for the eight Sacramento County businesses (some with multiple units) that are expected to incur compliance costs if the amendment to Rule 419 are adopted. The full analysis is included in Appendix D. Staff supplied the estimated compliance costs. First, ERG compiled revenue and employment data for the affected businesses using publicly available information sources. Next, the ratio of compliance cost to revenue was calculated for each business to determine the significance of impacts to these businesses. Finally, ERG calculated the output, earnings, and

employment impacts to the Sacramento County economy that can be attributed to the amendment of Rule 419 using the Regional Input-Output Modeling System (RIMS II) developed by the Department of Commerce's Bureau of Economic Analysis.

The calculated cost-to-revenue ratios ranged from 0.007% to 0.41% for the local businesses, and from 0.0001% to 0.41% for their parent companies. EPA, in developing regulations, considers impacts less than 1% to be negligible.

When faced with the added compliance costs, businesses may respond by passing the costs on to their customers, absorbing the costs, or reducing their workforces. If businesses passed all costs on to their customers, there would be virtually no employment losses. ERG estimated that if businesses fully absorbed the costs, there would be a loss of 0.4 full-time equivalents (FTEs) in the regional economy and if business fully converted all costs to employment cuts, there would be a loss of 3.5 FTEs. The upper bound of 3.5 FTE is negligible compared to Sacramento County's total employment of 673,500 (0.0005% of all jobs in region). For comparison, when SCAQMD adopted Rule 1147 in December 2008, they estimated a loss of 0.0009% of all jobs in their region.

Based on the analysis, Staff does not anticipate a significant impact on the economy or employment of the Sacramento region.

Range of probable costs, including costs to industry or business, including small business of the proposed rule:

Costs for businesses vary depend on the type of equipment installed, the rating of the burner, and the actual amount of emissions the device can potentially emit. Total capital costs, including installation, for low-NOx burners range from approximately $6,000 to as much $180,000 for an asphalt plant. For an emissions unit less than 10 MMBtu/hr, the average capital cost of retrofitting (including capital cost and installation) a compliant unit is, on average, approximately $9,000. For units over 10 MMBtu/hr, excluding asphalt plans, the average capital cost of retrofitting is approximately $23,000. Table 13 further breaks down the cost by unit size. Additional costs include the costs for permit modification and source testing to demonstrate compliance with the emissions limits once every second calendar year.

Availability and cost-effectiveness of alternatives to the proposed rule:

The alternatives to the proposed rule are listed below.

1. Not amend the rule: This option would result in no emission reductions and no cost to businesses. This option would not address state and federal mandates.
2. Propose the emission limits without any testing requirements: This option would result in less emission reduction, because without any verification of compliance, some equipment may exceed emission limits due to lack of maintenance.
3. Set a less stringent NOx emission standard of 60 ppmv for all units except asphalt plants. This option would result in a NOx reduction of 0.0152 tons per summer day and a cost-effectiveness of $9.16 per lb of NOx reduced. There is an increase in cost-effectiveness because of reduced emission reductions, even though the cost of the replacement equipment may be less expensive. However, in some cases, units designed to meet 60 ppmv may cost the same as units designed to meet 30 ppmv.

Options 1 and 3 are not recommended because NOx reductions improve both ozone and particulate matter air quality, and Sacramento County does not meet the health-based standards

for either of these pollutants. Additionally, these options may not meet the "all feasible measures" or BARCT requirements because SCAQMD, SJVUAPCD, and VCAPCD have already adopted and implemented rules that set standards similar to those proposed for Rule 419.

Option 2 is not recommended because it would provide no mechanism for the District to verify that emission reductions are being achieved. In addition, without a source testing requirement, the rule would not meet EPA's enforceability criteria for SIP rules.

Emission reduction potential of the proposed rule:
The amendments to Rule 419 will achieve an estimated reduction in NOx emissions of 0.0179 tons per summer day (see discussion under Emissions Impact).

Necessity of adopting the rule:
The amendments to Rule 419 fulfills the District's requirements to comply with state mandates to adopt BARCT and "all feasible measures." The amendments to Rule 419 satisfy a control measure commitment in the District's Triennial plan. The NOx emission reductions will help the District attain the state and federal ozone and state particulate matter ambient air quality standards.

PUBLIC OUTREACH/COMMENTS

Staff held a public workshop on June 5, 2018 to discuss the proposed amendments to Rule 414 and a proposed version of Rule 419 that was very similar to this currently proposed amendment. At the workshop, Staff received comments on the Rule 419 proposal that were applicable to all sources, not just major stationary sources of NOx. The comments raised technical issues that Staff has addressed in this proposed amended Rule 419. An exemption from source testing for inactive units and removal of the CO limit for soybean roasters have been added. The details are included in the "summary of amendments" section.

ENVIRONMENTAL REVIEW

California Public Resources Code Section 21159 requires an environmental analysis of the reasonably foreseeable methods of compliance. Amendments to Rule 414 provide regulatory relief to hot water pressure washers. No emissions reductions from hot water pressure washers were considered from the 2010 amendment to Rule 414. Emission reductions from proposed Rule 419 will offset any reductions that may be have been lost by exempting hot water pressure washers from Rule 414.

Compliance with the proposed amended Rule 419 for miscellaneous combustion units is expected to be achieved by replacing existing burners with low-NOx burners or replacing existing units with low-NOx units.

In 2008, SCAQMD adopted Rule 1147, NOx Reductions from Miscellaneous Sources, and examined its environmental impact[33]. In evaluating the impacts due to construction, SCAQMD anticipated that owners or operators who choose to install new equipment or retrofit existing units are not expected to construct any new buildings or structures. SCAQMD expected construction would occur from removing old burners, installing new burners, and installing or reworking existing ductwork, and concluded minimal secondary construction impacts would result from the installation of low NOx burners[34].

SCAQMD also evaluated the operational impacts from Rule 1147, which results in a significant decrease in NOx emissions from the regulated emissions units, up to a 75% reduction for uncontrolled units[35]. SCAQMD concluded that adopting Rule 1147 is not expected to result in an increase of emissions, will not cause a violation of any air quality standard or directly contribute to an existing or projected air quality violation, and that there are air quality benefits from adopting Rule 1147[36].

The conclusions by SCAQMD in the adoption of Rule 1147 are consistent with Staff's analysis of proposed amended Rule 419. Proposed amended Rule 419 will reduce operational NOx emissions from this source category and will have minimal secondary emissions impacts during construction activities when sources replace existing equipment with low-NOx equipment. Staff has concluded that there will be no significant environmental impacts from compliance with the proposed rules.

Staff finds that the proposed rules are exempt from the California Environmental Quality Act (CEQA) as an action by a regulatory agency for protection of the environment (Class 8 Categorical Exemption, §15308 State CEQA Guidelines) and because it can be seen with certainty that there is no possibility that the activity in question may have a significant adverse effect on the environment (§15061(b)(3), State CEQA Guidelines).

FINDINGS

The California Health and Safety Code (HSC), Division 26, Air Resources, requires local districts to comply with a rule adoption protocol as set forth in §40727 of the Code. This section contains six findings that the District must make when developing, amending, or repealing a rule. These findings and their definitions are listed in the following table.

Finding	Finding Determination
Authority: The District must find that a provision of law or of a state or federal regulation permits or requires the District to adopt, amend, or repeal the rule. [CHSC Section 40727(b)(2)].	The District is authorized to amend Rule 414 and Rule 419 by California Health and Safety Code (CHSC) Sections 40001, 40702, 40961, and 41010.

[33] "Final Environmental Assessment for Proposed rule 1147 – NOx Reductions from Miscellaneous Sources." SCAQMD. December 2008.
[34] Ibid. Page 2-8.
[35] Ibid. Page 2-12.
[36] Ibid. Page 2-18.

Finding	Finding Determination
Necessity: The District must find that the rulemaking demonstrates a need exists for the rule, or for its amendment or repeal. [CHSC Section 40727(b)(1).]	The proposed amendment to Rule 414 is necessary to remove requirements that are technologically infeasible for hot water pressure washers. The proposed amendments to Rule 419 are necessary to achieve additional NOx emission reductions that will assist the District in its effort to attain air quality standards and to comply with state "all feasible measures" requirements (Health and Safety Code 40914 and California Code of Regulations Section 40601).
Clarity: The District must find that the rule is written or displayed so that its meaning can be easily understood by the persons directly affected by it. [CHSC Section 40727(b)(3)].	Staff has reviewed the proposed rules and determined that both rules can be understood by the affected parties. In addition, the record contains no evidence that people directly affected by the rules cannot understand the rules.
Consistency: The rule is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations. [CHSC Section 40727(b)(4)].	The proposed rules do not conflict with, and are not contradictory to, existing statutes, court decisions, or state or federal regulations.
Non-Duplication: The District must find that either: 1) The rule does not impose the same requirements as an existing state or federal regulation; or (2) that the duplicative requirements are necessary or proper to execute the powers and duties granted to, and imposed upon the District. [CHSC Section 40727(b)(5)].	The proposed rules do not duplicate any existing state or federal regulations.
Reference: The District must refer to any statute, court decision, or other provision of law that the District implements, interprets, or makes specific by adopting, amending or repealing the rule. [CHSC 40727(b)(6).]	In adopting the amended rules, the District is implementing the requirements of CHSC Sections 40914(b)(2) and 40919(a)(3).
Additional Informational Requirements: In complying with HSC Section 40727.2, the District must identify all federal requirements and District rules that apply to the same equipment or source type as the proposed rule or amendments. [CHSC Section 40727.2].	No other District or federal rules apply to the same equipment or source type. BACT for this source category is based on SCAQMD Rule 1147, SJVUAPCD Rule 4309, and VCAPCD Rule 74.34. A comparison of Rule 419 with BACT requirements is included in Appendix B.

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South Coast Air Quality Management District. *Final Environmental Assessment for Proposed Rule 1147 – NOx Reductions from Miscellaneous Sources*. Diamond Bar, CA: South Coast Air Quality Management District, December 2008.

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APPENDIX A
LIST OF CHANGES TO RULES

Proposed Amendments to Rule 414 – Water Heaters, Boilers and Process Heaters Rated Less than 1,000,000 Btu per Hour

NEW SECTION NUMBER	EXISTING SECTION NUMBER	PROPOSED CHANGES
103	N/A	Add the severability language consistent with other District rules.
113	N/A	Add exemption for hot water pressure washers. This exemption is consistent with exemptions in SCAQMD Rule 219 and SJVUAPCD Rule 4308. Hot water pressure washers must continue to acquire and maintain District permits, as required by District Rule 201 – General Permit Requirements. The amount of reductions forgone from hot water pressure washers is offset by the reductions from proposed new Rule 419.
205	N/A	Define "hot water pressure washer" as a high-pressure cleaning machine in which the hot water discharge line is hand supported and intended for commercial and industrial applications. This definition is consistent with SJVUAPCD Rule 4308.
206-214	205-213	Sections renumbered.
301	Same	Update chart to remove outdated limits. No changes are made to the existing standards.

Proposed Amendments to Rule 419 – NOx from Miscellaneous Combustion Units

NEW SECTION NUMBER	EXISTING SECTION NUMBER	PROPOSED CHANGES
Same	101	Revise the purpose to include units not located at a major stationary source of NOx and to include cooking units
Same	102	Revise the rule applicability to add miscellaneous combustion units or cooking units with a total rated heat input of 5 million or greater not that are located at a major stationary source of NOx. The expanded applicability of the rule applies to miscellaneous combustion equipment: such as cooking ovens, dryers, dehydrators, ovens, furnaces, crematories and incinerators with a total rated heat input of 5 million Btu per hour or greater.
Same	114	Remove from the exemptions for cooking units, crematories, asphalt manufacturing dryers, furnaces, incinerators, kilns, and roasters. Emission limits have been added for these unit types.
115	N/A	Add an exemption from the emission limits for "low fuel usage" units. Low fuel usage units can use up to 30,000 therms of fuel per year. If a unit claiming this exemption exceeds the threshold, then the unit must meet the proposed NOx and CO limits within 12 months after the end of the calendar year (see Section 402). Units that exceed the low

NEW SECTION NUMBER	EXISTING SECTION NUMBER	PROPOSED CHANGES
		fuel usage threshold will not be allowed to use the low fuel usage exemption in the future.
116	N/A	Add exemption from the periodic source testing requirements of Section 403.2 for units that are inactive. To qualify for this exemption, the unit must not be located at a major stationary source of NOx and must not have operated in a calendar year when source testing would have been otherwise required.
117	N/A	Add exemption from the source testing requirements of Section 403 for units heated solely with infrared burners. Infrared burners directly heat the product in the combustion unit and are made with ceramic or metal fiber flame holding surfaces, produce most of their heat as infrared radiation, produce a red glow, and have very low NOx emissions[37].
211	N/A	Add definition "heat output" as the enthalpy of working fluid output of the unit, consistent with SCAQMD Rule 1147.
212	211	Section renumbered.
213	N/A	Add definition "infrared burner" consistent with SCAQMD Rule 1153.1. This definition is necessary to clarify the source testing exemption for infrared burners provided in Section 117. Infrared burners operate with very low NOx emissions.
214-217	212-215	Sections renumbered.
218	N/A	Add definition of "metal heat treating furnace" as a furnace used in metallurgical operations. Metal heat treating furnaces are subject to Rule 419.
219	N/A	Add definition of "metal melting furnace" as a furnace in which metals are charged and melted. This definition is consistent with SCAQMD Rule 1420.2. Metal melting furnaces are subject to Rule 419.
220	216	Change definition to include additional equipment types that are newly subject to the proposed rule.
221-222	217-218	Sections renumbered.
223	219	Add cooking units to the definition and section renumbered.
224-225	220-221	Sections renumbered.
226	N/A	Add definition "soybean roaster" to define units that must meet the NOx limit specifically for soybean roasters. Staff received information indicating that the unique characteristics of roasting soybeans does not allow for a low-NOx burner to meet the most stringent NOx or CO limits. Soybean roasters are a narrowly defined type of roaster that are not subject to a CO emissions limit and are provided a higher NOx emissions limit and are subject to Rule 419.
227-228	222-223	Sections renumbered.

[37] "Staff Report Proposed Rule 1153.1 – Emissions of Oxides of Nitrogen from Commercial Food Ovens." SCAQMD. October 2014. pp.1-4 – 1-7.

NEW SECTION NUMBER	EXISTING SECTION NUMBER	PROPOSED CHANGES
229	N/A	Add definition "therm" consistent with Rule 411. The low fuel usage exemption requires therms to be measured or calculated to demonstrate compliance with the exemption.
Same	301	Add NOx and CO emission limits for the additional miscellaneous combustion units that subject to the proposed rule. For gaseous fuel-fired equipment, several categories are listed with various emission limits including a catchall category for miscellaneous combustion units not specified. The NOx emission limit varies depending on the process temperature of the unit.
302	N/A	Add NOx and CO emission limits for cooking units. The NOx emission limit varies depending on the process temperature of the cooking unit. A higher CO emission limit is provided consistent with SCAQMD Rule 1153.1.
303 – 303.1	302 – 302.1	Sections renumbered and section references updated.
303.2	N/A	Add sections to require an owner or operator using the low usage exemption to install and maintain equipment to demonstrate compliance for low fuel usage limitation. Owners or operators can demonstrate compliance by meeting at least one of the conditions specified in Sections 303.2a through 303.2c. These requirements are consistent with the low fuel usage exemption provided in Rule 411.
303.3	302.2	Section renumbered.
304	303	Section renumbered.
Same	401	Add compliance schedule for units that are not located at major stationary sources of NOx.
401.1	N/A	Add heading to specify the existing timeline applies to units located at major stationary sources of NOx.
401.2	N/A	Add compliance schedule for all units not located at a major stationary source of NOx. An owner or operator must demonstrate compliance with the proposed rule within 12 months after the date of adoption. For sources that have more than one unit subject to the proposed rule, an extended compliance schedule is provided as shown in Table 3. Sources with 2 or 3 units are provided an additional 12 months for each additional unit required to be in compliance. Sources with more than 3 units are required to demonstrate compliance of additional units within 36 months. Any units installed after the date of adoption must demonstrate compliance with the rule requirements within 60 days after initial operation. New units that are subject to BACT standards could be required to meet more stringent limits than those in Rule 419.
402	N/A	Add "loss of exemption – low fuel usage" section for low fuel usage units. Once a unit exceeds the low fuel usage exemption thresholds, the owner or operator of the unit must demonstrate compliance within the following year from the end of the calendar year where the unit

NEW SECTION NUMBER	EXISTING SECTION NUMBER	PROPOSED CHANGES
		exceeded the low usage amount. A unit that exceeds the exemption thresholds cannot qualify for low usage in the future, even if the unit returns to low usage operation characteristics.
403	402	Revise “source testing frequency” section to include reference to the exemption for low fuel usage units. For clarity, the source testing section has been separated into subsections.
403.1	N/A	Add subsection heading “initial source test” that requires owner or operator to verify compliance on or before the schedule specified in Section 401.
403.2	N/A	Add subsection heading “periodic source testing” that requires a source test once every second calendar year after the initial source test. This frequency is consistent with current permitting practice.
403.3	402.1	Section renumbered.
404	403	Section renumbered.
Same	501.1 – 501.3	Add references to cooking unit emission limits section and renumbered section references. The same testing methods are applicable to cooking units.
502.2	N/A	Add fuel usage recordkeeping requirement for low fuel usage units pursuant to Section 115. Owners or operators of units demonstrating low fuel usage using a totalizing fuel meter must maintain records of HHV, calendar year gaseous and non-gaseous fuel usage.
502.3	N/A	Add hour usage recordkeeping requirement for low fuel usage units exempt pursuant to Section 115. Owners or operators of a unit demonstrating compliance using hourly operation must maintain the calendar year hours of operation and the calendar year calculated fuel usage as specified in Section 303.2b or 303.2c.
502.4 – 502.5	502.2 – 502.3	Sections renumbered.

APPENDIX B
COMPARISON OF PROPOSED RULE REQUIREMENTS WITH OTHER AIR POLLUTION CONTROL REQUIREMENTS

California Health and Safety Code (CHSC) §40727.2 requires air districts to provide a written analysis to: 1) identify all existing federal air pollution control requirements, including Best Available Control Technology (BACT) for new or modified equipment, that apply to the same equipment or source type as the proposed rule, and 2) identify any of the District's existing or proposed rules that apply to the same equipment or source type. The analysis shall compare the following elements:

- Averaging provisions, units, and any other pertinent provisions associated with emission limits.
- Operating parameters and work practice requirements.
- Monitoring, reporting, and recordkeeping requirements, including test methods, format, content, and frequency.
- Any other element that the air district determines warrants review.

There are no other proposed or existing District rules that apply to this source category. Table B-1 contains the required analysis identifying federal BACT air pollution control requirements.

Comparison with BACT: See comparison in Table B-1.

Comparison with existing federal air pollution control requirements:
National Emissions Standards for Hazardous Air Pollutants[38] (NESHAP) that may be applicable to similar equipment types subject to Rule 419 include:

- Subpart JJJJJ – Brick and Structural Clay Products Manufacturing
- Subpart KKKKK – Clay Ceramics Manufacturing
- Subpart RRRRRR – Area Sources: Clay Ceramics Manufacturing

Subparts JJJJJ and KKKKK only apply to major stationary sources. No major stationary sources subject to these subparts are located in Sacramento County. Subpart RRRRRR applies to area sources that process more than 50 tons per year of wet clay using a kiln that fires glazed ceramic ware. Staff is not aware of any kilns in Sacramento County that fire glazed ceramics.

New Source Performance Standards (NSPS)[39] that may be applicable to similar equipment types subject to Rule 419 include:

- Subpart E – Standards of Performance for Incinerators
- Subpart I – Standards of Performance for Hot Mix Asphalt Facilities
- Subpart UUU – Standards of Performance for Calciners and Dryers in Mineral Industries

All three subparts set performance standards only for particulate matter and therefore are outside the scope of Rule 419. However, the applicability of each subpart is further discussed below.

Subpart E is not applicable to any sources covered by Rule 419. Subpart E is only applicable to incinerators with a charging rate of > 45 metric tons/day (50 tons/day).

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[38] 40 CFR Part 63
[39] 40 CFR Part 60

Subpart I is applicable to asphalt manufacturing facilities subject to Rule 419. These facilities shall not emit gases which contain particulate matter in excess of 0.04 gr/dscf and shall not emit gases which exhibit 20% opacity or greater. The permitted asphalt manufacturing facilities are already subject to Subpart I by permit conditions.

Subpart UUU is applicable to calciners and dryers at mineral processing plants including the brick and related clay products industry. One source in the District operates a brick tunnel kiln and manufactures brick and related clay products and is considered a mineral processing plant under Subpart UUU.

A modification, reconstruction, or a replacement of the brick tunnel kiln may be required for the source to meet Rule 419 requirements. If a modification or a replacement of the brick tunnel kiln is required, that action might not be considered a modification under the NSPS program as defined in 40 CFR §60.14.

40 CFR §60.14 states that any physical or operational change to an existing facility that results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of section 111 of the Act. Upon modification, an existing facility shall become an affected facility for each pollutant to which a standard applies and for which there is an increase in the emission rate to the atmosphere.

40 CFR §60.15 defines a reconstruction as a replacement where an owner or operator of an existing facility proposes to replace components, and the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility. Under Subpart UUU, the cost of replacement of equipment subject to high temperatures and abrasion on processing equipment shall not be considered in calculating either the “fixed capital cost of the new components” or the “fixed capital cost that would be required to construct a comparable new facility” under §60.15. Calciner and dryer equipment subject to high temperatures and abrasion are: end seals, flights, and refractory lining.

A retrofit or burner replacement of the brick tunnel kiln that does not increase emissions of particulate matter or exceed 50 percent of the fixed capital cost of a new facility would not trigger Subpart UUU applicability. In addition, the modification or replacement of a device (brick tunnel kiln) whose primary function is the reduction of NOx emissions is not considered to be a modification under 40 CFR §60.14(e)(5).

Table B-1:
40727.2 Matrix for Proposed Rule 419 NOx from Miscellaneous Combustion Units

Comparative Requirements		
Elements of Comparison	Proposed Amended Rule 419	Best Available Control Technology (BACT)/ Lowest Achievable Emission Rate (LAER)
Applicability	The amendments expand the applicabity to include any miscellaneous combustion unit or cooking unit with a rated heat input capacity of 5 MMBtu/hr or greater, including dryers, dehydrators, ovens, furnaces, crematories, and incinerators.	Various BACT determinations exist for miscellaneous NOx combustion units including dryers, ovens, incinerators, furnaces and remediation units.
Exemptions	Units subject to other district rules Air pollution control devices Units not subject to District permits Duct burners Electric utility boilers Gas flares Internal Combustion Engines Low fuel usage units Source testing of infrared burners	
NOx Emission Limits	See Table 4. Units are in ppmvd @ 3% O_2 or lb/MMBtu.	<u>SMAQMD BACT guidelines</u> Commercial Laundry Dryer: 30 ppmvd @ 3% O_2 Drying Oven: 20 ppmvd @ 3% O_2 <u>SCAQMD BACT guidelines</u> Asphalt Batch Plant: 36 ppmvd @ 3% O_2 Dryer – Kiln: Natural gas with low-NOx burner Tenter frame fabric dryer: 60 ppmvd @ 3% O_2 Other dryers and ovens: 30 ppmvd @ 3% O_2 Metal heating furnace: 50 ppmvd @ 3% O_2 Food Oven: 30 or 60 ppmvd @ 3% O_2 <u>SJVUAPCD BACT guidelines</u> Commercial bakery oven: 30 ppmvd @ 3% O_2 Soil remediation operation: Low-NOx burner Various Dryers for food processing: 20 - 70 ppmvd @ 3% O_2
Averaging Provisions	None	N/A
Operating parameters & Work Practice Requirements	Perform combustion system maintenance in accordance with the manufacturers schedule and specifications	
Monitoring/ Testing	Initial Source Test Source test once every second calendar year thereafter	N/A
Monitoring/ Recordkeeping	• Monitor and keep records of fuel usage for low usage units. • Keep records of manufacturer's, distributor's, installer's, or maintenance company's written maintenance schedule and instructions. • Keep source test reports and data as applicable. • Maintain records on site for a continuous five-year period.	N/A

APPENDIX C
COMMENTS AND RESPONSES

Public Workshop for Rules 414 and 419
June 5, 2018, 1:00 p.m.

Attendees:

John Conboy, American River Ag
Becky Wood, A. Teichert & Son
John Lane, A. Teichert & Son
Candice Longnecker, Granite Construction
Vince Montoya, Los Rios Community College District
G. Pyka, Blue Diamond Growers
George Rodriguez, Forterra Pipe
Greg Stevenson, H.C. Muddox
David Vasquez. Quikrete

Oral Comments from the Public Workshop

Question #1: Can you come in and out of the low usage exemption in Rule 419?

Response: No. In order to qualify for the low usage exemption, a permit modification is required. An exceedance of the low usage threshold would result in violation of permit conditions and under Section 402; the unit would not subsequently qualify for the low usage exemption.

Question #2: Will source tests be required for units that haven't been operating?

Response The proposed amended Rule 419 includes an exemption from source testing for inactive units. The proposal allows inactive units (units that are not operated in a calendar year in which source testing would otherwise have been required) to delay source testing until resuming operation. Source testing must be conducted within 60 days of resuming operation. See Sections 116 and 403.

Question #3: The NOx limit for kilns in Ventura County APCD Rule 74.34 is 80 ppmv. In Rule 419, your proposed NOx limits for kilns are 30 ppmv for units operating at less than 1200 °F and 60 ppmv for units operating at 1200 °F or greater. Why are your proposed limits lower than the VCAPCD limit?

Response: The proposed amendment Rule 419 maintains the NOx limit for kilns at 30 ppmv for units operating at less than 1200 °F and 60 ppmv for units operating at 1200 °F or greater. The VCAPCD limits are higher because of unique characteristics at one of their sources, and those reasons that are not applicable to the source in Sacramento County.

Question #4: My Company's soybean roaster (American River Ag) can't meet the 400 ppmv limit for CO.

Response: The proposed amended Rule 419 does not contain a CO emission limit for soybean roasters. Information from the source and the burner manufacturer detailed the unique nature of the soybean roasting process. The flame is in direct contact with the soybeans and results in incomplete combustion of the roasted product.

Question #5: What are the differences between units that are subject to Rule 411 (NOx from Boilers, Process Heaters and Steam Generators) and the units that will be subject to Rule 419?

Response: Rule 411 applies to boilers, process heaters, and steam generators in which the heating of the process fluid is indirect – that is, there is no contact between the products of combustion and the material being heated. Proposed Rule 419 will apply to dryers, dehydrators, heaters, and ovens where the material being heated comes into direct contact with the combustion products from the burners.

Question #6: How many major sources will be subject to this rule?

Response: There are 13 major sources in Sacramento County. The requirements of Rule 419, as adopted on July 26, 2018, applies to one major stationary source of NOx. The proposed amendments to Rule 419 expands the applicability to all stationary sources. The expanded applicability of Rule 419 includes one additional major stationary source, for a total of two major stationary sources that will be subject to Rule 419.

Question #7: Is a source test required every 24 months, always in the same month of the year as the previous test?

Response: No. The rule requires a source test to be performed “once every second calendar year.” The source test may be performed at any time during the year it is required.

Question #8: Will a 30-day notice be required prior to a scheduled source test?

Response: Yes. At least 30 days prior to the scheduled source test date, the owner or operator must submit a source test plan to the District.

Question #9: When does Rule 419 take effect? Is it when EPA approves it into the SIP?

Response: The rule will take effect immediately upon adoption by our Board of Directors. Newly affected sources have 12 months from that date to demonstrate compliance with the emission limits. Sources that own or operate more than one unit have an additional 12 months compliance time for the second unit. See Section 401 for the compliance schedule.

<u>Written Comments from Greg Stevenson, H.C. Muddox (June 13, 2018)</u>

Question #1: Ventura County APCD’s Rule 74.34 identifies kilns as requiring bespoke emissions standards because of their unique design, materials and production processes. I would encourage the SMAQMD to consider the incorporation of similar limits if

required. Based on ARB emissions data, HCM is not a Major Source, or a top ten NOx emitter.

Response: See response to question #3.

APPENDIX D
EMISSION CALCULATION PROCEDURE

Staff calculated emissions and emission reductions based on survey data where available. The fuel usage provided by each source was used to calculate the source's current emissions and proposed Rule 419 compliant emissions. The emission reductions were calculated for each unit as the difference between the current emissions for the unit (using the emission factor from the permit to operate for the unit) and the compliant emissions for the unit (using an emission factor for the proposed rule NOx emission limit). Actual emissions and emission reductions may vary slightly depending on the source's current operation compared to the operation at the time of the survey.
Emissions were calculated using the following equation:

Emissions = Activity Rate (therms/year) x conversion factor (MMBtu/therms)
x Emission Factor (lb/MMBtu)

Emission reductions were calculated as the difference between current emissions and compliant emissions of the unit using the same activity rates.

Emissions and emission reductions are calculated using the following assumptions:

Cost and Emission Factors for Proposed Rule 419			
Information	**Value**	**Units**	**Data Source**
Total Units Subject to Proposed Rule 419	19	Units	Permit DB & Survey Data
Total Units Compliant with Proposed Rule 419 by Permit Condition	7	Units	Permit DB & Survey Data
Heating value of Natural Gas	1,020	Btu/dscf	AP 42 Appendix A
F Factor Natural Gas	8,710	dscf/mmBtu	CFR - Appendix F to Part 75
30 ppm Compliant NOx EF	0.036	lb/mmbtu	Rule Limit
40 ppm Compliant NOx EF	0.049	lb/mmbtu	Rule Limit
60 ppm Compliant NOx EF	0.073	lb/mmbtu	Rule Limit
Conversion to 3% O2	1.17		CFR - Appendix F to Part 75
Annual Interest Rate	7%	percent	Market Value
Equipment Useful Life	15	years	Assumption
Installation Cost as Percentage of Equipment Cost	50%	percent	Assumption
Equipment Cost for Low-NOx Asphalt Burner ($90,000 2003 dollars)	$119,445	2017 dollars	Control Measure 471
Average NOx + CO Source Test Cost	$2,500	2017 dollars	Source: Phone conversation between Kevin Williams and Regan Best, 3/22/17.
District Source Test Fee	$1,919	2018 Fee	Rule 301 Section 311
# Source Tests Over Useful Life (1 Initial and 7 per unit lifetime)	8	tests	Rule 419 Requirement
# of Asphalt plants conducting source testing per permit condition	3	units	Permit DB
# of other sources conducting source testing per permit condition	4	units	Permit DB

APPENDIX E
ECONOMIC IMPACT ANALYSIS

ECONOMIC IMPACT ANALYSIS

SMAQMD PROPOSED AMENDMENTS TO RULE 419 NOX FROM MISCELLANEOUS COMBUSTION UNITS

Final Report

Prepared for:

Sacramento Metropolitan
Air Quality Management District
Program Coordination Division
777 12th Street, 3rd Floor
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Under Contract No. E2014021

September 6, 2018

1. Introduction

The Sacramento Metropolitan Air Quality Management District (SMAQMD or District) adopted Rule 419—NOx from Miscellaneous Combustion Units—on July 26, 2018. This rule currently applies only to major sources of NOx. SMAQMD is now proposing amendments to Rule 419 that will cover certain non-major stationary sources of NOx (referred to as non-major sources). The purpose of the amendments is to include non-major sources and reduce NOx emissions by establishing emission limits for asphalt plants, furnaces, incinerators, crematories, kilns, roasters, and cooking ovens. Eastern Research Group (ERG), under contract with SMAQMD, estimated the impacts to the economy of Sacramento County that might result from the adoption of these proposed amendments to Rule 419. Specifically, ERG determined how the rule amendments will affect potentially regulated firms as well as the output, earnings, and employment in the county overall. If adopted, the amendments to Rule 419 would require certain non-major sources in the District to retrofit or upgrade equipment that does not meet the proposed NOx emission limits. In addition, the amendments to Rule 419 would require such sources to perform periodic source testing to verify compliance.

SMAQMD needs to assess whether the costs to comply with the amendments to Rule 419 would have significant economic impacts on firms and facilities in the region, as well as whether those costs have a substantial impact on the region's economy, measured as sizeable impacts on earnings, employment, and output.

SMAQMD provided ERG with their estimated compliance costs for eight establishments, with a total of 13 miscellaneous NOx-emitting units, that are expected to incur costs under the amendments to Rule 419 as non-major sources. Using these estimates, ERG profiled the affected entities (Section 2), summarized the cost information provided by SMAQMD (Section 3), and performed an economic impact screening analysis assessing impacts to the firms and facilities assuming no cost passthrough and discussing the potential for impacts on consumers should all costs be passed through (Section 4). ERG then considered the magnitude of the impacts on the economy of Sacramento County (Section 5).

2. Profile of Affected Entities

According to the information provided by SMAQMD, eight establishments would incur costs to comply with Rule 419. The eight sources are shown in Table 1.

Table 1 presents a summary of financial information that could be determined for the eight potentially affected sources. The information includes the establishment name associated with the source, the number of establishments ERG could identify as owned by the source's parent firm, the revenues and employment of the source's parent firm, as well as revenue and employment information that could be determined for the source facility or facilities themselves.

ERG used two main online sources for revenue data, Manta.com and Zoominfo.com, which, for limited information, are free through internet searches of firm names. Revenue and employment data from any such source, however, can be difficult to interpret. Determining the scope and nature of businesses can be very complicated and can take many hours of research to uncover exactly what reported revenues and employment really mean. For example, a company may be doing business under several names, with several separate enterprises within the same establishment location. In cases where the information appeared to conflict or be connected to related but slightly different firm names, ERG discusses in detail the assumptions we make to estimate impacts.

Table 1. Sources Subject to Rule 419 Required to Retrofit or Upgrade and/or Test for NOx Emissions

Sources Subject to Rule 419	NAICS	NAICS Description	Size of Business	SBA Size Standard	Total Number of Establishments	Parent Company Revenue ($millions)	Smallest Establishment Level Revenue (Sacramento) ($millions)	Total Employment at Parent	Sacramento Co. Employment
A. Teichert & Son	327320	Ready-Mix Concrete Manufacturing	Large	<500 Employees	32	$813	$20	1,800	20-49[b]
America Lithographers (dba Pacific Standard Press)	323111	Commercial Printing (except Screen and Books)	Small	<500 Employees	1	$14	$14	70	70
Bimbo Bakeries USA, Inc.	311812	Commercial Bakeries	Large	Foreign	>60 (US)	$10,556	$10	26,000	>100
Forterra Pipe & Precast	327390	Other Concrete Product Manufacturing	Large	<500 Employees	74[c]	$1,400	>$50	5,353	20-49
Koefran Industries (aka Koefran Pet Services)[a]	812210	Funeral Homes and Funeral Services	Small	<$7.5 million	4	$2	$2	>25	25
Pabco Clay Products, LLC (dba HC Muddox)	327120	Clay Building Material and Refractories Manufacturing	Large	<750 Employees	3	$221	$7	3,000	35
Riverside Elevators	493130	Farm Product Warehousing and Storage	Small	<$27.5 million	1	$11	$11	20	20
Silgan Can Company	311422	Specialty Canning	Large	<1,250 Employees	38	$2,182	NA	6,300	NA

[a] At least four facilities are associated with Koefran; one is located in Reno, NV, one in Colma, CA, and two in Sacramento, CA. Only one of the two in Sacramento is associated with a crematorium subject to the rule. Koefran indicated (Williams, 2018) that 25 employees are associated with the pet crematory. See text below for more discussion about revenues at the facility level.

[b] At the manufacturing site.

[c] This number represents the total number of US-based manufacturing establishments and should be treated as a lower-bound estimate of the total number of establishments. It does not include a total of five manufacturing establishments in Canada and Mexico, as well as any retail locations.

NA=Not available.

Source: Manta.com, Zoominfo.com; SBA (2017).

Table 1 also provides information on the North American Industrial Classification System (NAICS) designation of the parent company, the industry description associated with that classification (e.g., ready mix concrete manufacturing; commercial bakeries), and whether, under that NAICS classification, the parent firm qualifies as a small business under Small Business Administration's (SBA) definitions, which are expressed either as an employment or revenue cutoff.

As Table 1 shows, most of the sources are associated with large, multifacility firms. Three sources are associated with small firms, of which two are single-facility firms and one has at least three additional facilities.

Revenue size for parent firms ranges from $2 million to over $10 billion. Employment at the parent firms ranges from possibly as low as 20 to as high as 26,000 or more. Size of parent (and any foreign affiliation) is essential in defining which firms might be considered small businesses. SBA considers as small business only those firms (not facilities) that 1) meet the size definitions, either in terms of revenues or numbers of employees, 2) are not affiliated with parent corporations that exceed those size limits, and 3) are not affiliated with foreign-owned entities). The local firms/facilities, to the best that could be determined, ranged from $2 to $50 million in revenues and possibly as low as 20 to over 100 employees.

The firms associated with the sources that SMAQMD identified as incurring costs due to the proposed Rule 419 are described in more detail below:

- **Teichert & Sons**. Teichert, also referred to as Teichert Construction and A. Teichert & Sons, is a construction company in California that began operations in 1887 (Teichert, 2018a). Teichert has five (out of 32) locations in Sacramento County, including their corporate office, two aggregates facilities, two ready-mix facilities and other offices (Teichert, 2018b).
- **Pacific Standard Print (PSP).** PSP, also known as American Lithographers Inc., is a single location commercial printing company that has been operating since 2002 (Manta, 2018c).
- **Bimbo Bakeries USA, Inc.** is a baking company that owns 12 brands (e.g., Thomas, Sara Lee, Nature's Harvest, Arnold, etc.) and is part of the larger baking company, Grupo Bimbo, a Mexican firm. Their U.S. headquarters is in Pennsylvania and one out of the 12 outlet stores in California is located in Sacramento County (Bimbo Bakeries USA, 2018).
- **Forterra Pipe & Precast.** Forterra is a publicly held, multinational firm operating in Canada, U.S., and Mexico, with more than a dozen subsidiaries and numerous facilities throughout North America. The firm focuses on products needed for water-related infrastructure applications, including water transmission, distribution, and drainage. Little information is available on the local Sacramento facility, which produces drainage pipes and products; the listed website is that of its parent (Forterra Pipe & Precast, 2018).
- **Koefran Industries (aka Koefran Pet Services)**. Koefran is a pet crematory that has been operating in Sacramento since the 1970s. They offer private and group pet cremation. They have two facilities in Sacramento, one of which is a retail outlet where customers can purchase pet crematory services (Eagles Nest Road), as well as urns, plaques, or other memorials. The other (Kiefer Boulevard location) houses the crematorium, which is the facility subject to the rulemaking. They have at least two other facilities, one in Colma, CA, and the other in Reno, NV. ERG was not able to determine whether these two facilities are retail only, but it is possible that the crematorium serves the other three locations. The corporation is, in turn, owned by SRC

Companies, which has employment of 120 and revenues of $24 million, according to Zoominfo (2018a). The revenue information for these establishments is somewhat unclear. One source (Manta, 2018f) indicates the Kiefer Boulevard facility has revenues of $180,000 and employment of 2. The corporate headquarters (Sacramento, location designated only as a PO box), however, is noted to have revenues of $2 million and employment of 10 (Zoominfo, 2018b). Later discussions with the firm (Williams, 2018) indicated that the pet crematory business employs 25 persons at the Kiefer Boulevard site (which is incompatible with the revenue figure of $180,000). The $2 million in revenues reported by Zoominfo may include the other locations or may just be the Sacramento operations. However, because the pet services businesses are likely dependent on the crematorium (that is, without the crematorium, all the pet service businesses owned by Koefran might not be possible to operate), we assume that the crematorium is operating as a cost center (that is, the firm judges profitability at the firm level, not at the facility level). Using this this assumption, we use the $2 million revenue estimate for the entire business to judge impacts on the crematorium facility (see Section 4).

- **Pabco Clay Products, LLC**. Pabco Clay Products is a subsidiary of Pacific Coast Building Products. The firm has three divisions—Gladding McBean, H.C. Muddox, and Interstate Brick—that manufacture clay products for the building industry. Of the three, only H.C. Muddox is located in Sacramento. This division manufactures bricks (Pacific Coast Building Products Inc., 2018).
- **Riverside Elevators**. This firm, also known as Riverside Ltd., is a single facility firm located in Sacramento County, operating in the grain elevator, storage-only industry for 35 years (Manta, 2018g).
- **Silgan Can Company**. Silgan is also known as Silgan Containers and was established in 1987. It is the largest provider of metal food packaging in the United States, according to the website (Silgan Containers, 2018a). Their facilities include a corporate office (in Woodland Hills, California), sales offices, technology centers, and manufacturing facilities. One manufacturing facility is in Sacramento County facility. No information could be found for this facility, indicating that it is likely not a revenue center (Silgan Containers, 2018a). Therefore, although we note that revenue data are unavailable at the facility level, we do consider what the facility's revenues might be assuming revenues are similar to the average for all Silgan facilities (about $57 million).

3. Compliance Costs

SMAQMD provided ERG with their estimated, annualized compliance costs for the eight sources discussed in Section 2. These costs are presented in Table 2, along with information on the total number of units, whether the units are compliant or non-compliant and how many units require testing. The costs are provided for acquisition of capital equipment, installation, and permit modification costs, which are annualized at 7 percent over 15 years, along with testing costs, which are incurred every two years, and are also annualized. SMAQMD estimates that the total annualized costs for complying with the proposed Rule 419 requirements range from $3,407 to $45,743 annually, per firm. Annual costs across all affected firms total $85,975 per year.

4. Impact Screening Analysis

Impacts of a cost increase on production may be absorbed by producers but can also fall on consumers when producers are able to pass some costs through to consumers. Thus, in this screening analysis, we look at two bounding impact scenarios: one in which no costs can be passed through to consumers (thus

all direct economic impacts are absorbed by producers) and one in which all costs are passed through to consumers.

Under the no-cost-passthrough scenario, we measured impacts on the affected entities using a screening analysis known as a sales test. When data on firm and facility finances are limited, many federal agencies, such as the U.S. Environmental Protection Agency (EPA), determine impacts by performing a sales test. A sales test measures the ratio of compliance costs to revenues. Given that SMAQMD is an environmental agency, ERG looks to EPA's guidance regarding establishing benchmarks for sales tests. EPA uses sales tests predominantly to determine whether there are significant impacts on a substantial number of small entities (required under the federal Regulatory Flexibility Act). Additionally, EPA uses a sales test as a measure of impacts among larger firms as well when more detailed financial data (such as that which might be used to judge impacts on e.g., profits, debt service, or liquidity) are lacking.

EPA suggests the use of two benchmarks for a sales test. EPA generally recognizes a benchmark of compliance costs to sales less than 1 percent to indicate that impacts are negligible. Those between 1 percent and 3 percent are tangible impacts, and those above 3 percent could be considered potentially high impacts. ERG adopts these benchmarks to assess the potential for impacts stemming from the proposed amendments to Rule 419.

Table 3 shows the results of the analysis of industry impacts, first at the parent company level (where small business impacts should be assessed), where we found negligible impacts for all firms. This means that, by SBA definitions and using these benchmarks, SMAQMD might support a finding of no significant impacts on any small businesses. To the extent that ERG could find revenue data at the level of the sources located in Sacramento County, and to the extent that we believed the facility to be operating as a profit center (its revenues are expected to cover its costs independently of other businesses within the firm)) we also assess impacts at that level. We do this because it is possible that impacts at lower levels of corporate organization could lead to facility closures. As the table shows, all firms and facilities are expected to face costs that are less than 1 percent of revenues.

If these entities could pass through all costs of the rule to consumers, the prices to consumers would increase on average by no more than the same very small percentage over all affected products and services. Furthermore, many of these products and services are marketed outside the county, further reducing impacts within the county. Any price increases, should they occur, would likely, therefore, be very small with limited effect on consumers in Sacramento County.

As an example, Koefran might increase the price of cremations by as much as 0.38 percent assuming the firm can pass through all costs and does so equally across all its products and services. This firm is estimated to experience one of the larger cost impacts relative to revenues among the affected entities. Although Koefran does not indicate prices online, websites for two other pet crematories (one in Sacramento County and one in Yuma County) provided information indicating that the price for cremating a medium size dog might range around $160 (Heaven's Gate Pet Memorial Center, 2018; Caring Pet Crematory, 2018). Assuming Koefran's prices are similar, the price for a typical cremation might rise by about $0.61. This price increase is negligible compared to the median household income in the county, which is $57,509 (US Census, 2016).

Table 2. Estimated Costs of Compliance with Rule 419

Sources Subject to Rule 419	# of Units	Compliant Units	Non-Compliant Units	# Units Already Required to Source Test	# Units that Must Conduct Source Testing	Capital Costs	Permit Modifica-tion Costs	Annualiz-ed Initial Costs	Annualized Source Testing Cost	Total Annualiz-ed Cost
A. Teichert & Son	3	1	2	1	2	$358,335	$15,358	$41,029	$4,714	$45,743
American Lithographers (dba Pacific Standard Press)	1	0	1	0	1	$8,608	$3,839	$1,367	$2,357	$3,723
Bimbo Bakeries USA, Inc.	2	0	2	0	2	$17,216	$1,918	$2,100	$4,714	$6,814
Forterra Pipe & Precast	1	0	1	0	1	$8,608	$959	$1,050	$2,357	$3,407
Koefran Industries (aka Koefran Pet Services)	2	0	2	0	2	$17,216	$15,358	$3,576	$4,714	$8,290
Pabco Clay Products, LLC (dba HC Muddox)	1	0	1	0	1	$37,874	$1,919	$4,369	$2,357	$6,726
Riverside Elevators	1	0	1	0	1	$8,608	$959	$1,050	$2,357	$3,407
Silgan Can Company	2	0	2	0	2	$25,824	$2,878	$3,151	$4,714	$7,865
Total	13	1	12	1	12	$482,289	$43,188	$57,693	$28,283	$85,975

Source: SMAQMD

Table 3. Results of Sales Test Screening Analysis

Sources Subject to Rule 419	Firm Size	Total Annualiz-ed Cost	Parent Company Revenue ($millions)	Smallest Establish-ment-Level Revenue ($millions)	Parent Company % Cost/ Revenue	Smallest Establish-ment Level % Cost/ Revenue	Financial Impact Assessment
A. Teichert & Son	Large	$45,743	$813	$20	0.0056%	0.2287%	No impact at any level
American Lithographers (dba Pacific Standard Press)	Small	$3,723	$14	$14	0.0266%	0.0266%	No impact at any level
Bimbo Bakeries USA, Inc.	Large	$6,814	$10,556	$10	0.0001%	0.0681%	No impact at any level
Forterra Pipe & Precast	Large	$3,407	$1,400	$50	0.0002%	0.0068%	No impact at any level
Koefran Industries (aka Koefran Pet Services)	Small	$8,290	$2	$2	0.4145%	0.4145%	No impact at any level
Pabco Clay Products, LLC (dba HC Muddox)	Small	$6,726	$221	$7	0.0030%	0.0961%	No impact at any level
Riverside Elevators	Small	$3,407	$11	$11	0.0310%	0.0310%	No impact at any level
Silgan Can Company	Large	$7,865	$2,182	NA	0.0004%	NA	No impact at firm level; unknown, but unlikely impact at facility level[a]

NA=Not available.

[a]If establishment revenues are similar to the average among facilities owned by this company ($57 million), impact at the facility level is unlikely.

5. Regional Impacts

ERG also calculated the output, earnings, and employment impacts to the Sacramento County economy that can be attributed to the implementation of the amendments to Rule 419. ERG used two data sources as the basis for this calculation: 1) industry data from the 2012 County Business Patterns (CBP), extracted from the Economic Census (US Census, 2012); and 2) multipliers from the Regional Input-Output Modeling System (RIMS II) developed by the Department of Commerce's Bureau of Economic Analysis (BEA).

CPB contains data for establishments, revenue, payroll, and employment by detailed NAICS industry. Since revenue data is often withheld at high level of industry detail (e.g. 5- and 6-digit NAICS), ERG estimated industry revenues by calculating the average revenues per establishment at the highest level of detail available and multiplied that number by the number of establishments in the 6-digit NAICS.

RIMS II multipliers are used to calculate the economic impacts of additional costs levied on firms (for example, due to a regulatory action) on output, earnings, and employment. The idea behind multiplier effects is that an initial economic shock can trigger further rounds of activity (i.e. layoffs in a manufacturing facility can lead to layoffs in its suppliers due to the decreased demand for their product). For output and earnings, those multipliers are calculated as a ratio of a dollar change in demand to a dollar change in output. The multiplier represents the total effect of all rounds of economic activity.

For regional employment effects, ERG used two different types of multipliers: one for the impact of change in initial demand and another for the change in initial employment. ERG used these to calculate lower and upper bound scenarios for employment impacts. The lower-bound employment impact scenario occurs when affected firms absorb costs entirely causing a loss in output; using this approach yields an initial demand shock that is equal to the total output loss. The upper bound scenario occurs when firms cut employee hours instead; ERG assumes firms will adjust to shed wage and salary equal to the firm's total annualized costs. ERG presents all employment changes in full-time employee equivalents (FTE), where one FTE equals 2,080 hours.

To determine the number of FTEs that employers might cut in response to increased costs, ERG used a ratio of the annualized costs incurred by each firm to the average earnings per employee in the industry (similar to our revenue calculations, ERG used the most granular industry available). For example, the cost incurred by Bimbo Bakeries ($6,814) represents 13 percent of the average pay in NAICS 311812, Commercial Bakeries (approximately $52,500 per US Census Bureau, 2012). Therefore, for an upper-bound impact ERG assumed Bimbo might cut 0.13 FTEs (13 percent of 1 FTE) from employment as a direct impact from the proposed rule, which can then be used with the appropriate employment multiplier to estimate the wider effect of this direct impact on the Sacramento economy (19 percent of 1 FTE; see upper bound estimate for employment losses for Bimbo in Table 4).

ERG's estimate of total economic impacts across Sacramento County is presented in Table 4. ERG found that this rule might lead to total losses of approximately $121,000 in output and $23,000 in earnings. Employment loss may vary from 0.4 to 3.5 full-time equivalents and may manifest as layoffs, decrease in hours offered to workers, or a combination of both. The annualized output and earnings impacts are approximately 0.0002 percent and 0.0001 percent of total firm revenue and employee earnings, respectively, in Sacramento County (excluding the Utilities sector and government; US Census Bureau, 2012). The loss of as many as 3.5 FTEs is also negligible compared to the county's total employment of 673,500 (State of California, 2018)

Table 4. Economic Impacts

Sources Affected by Rule 419	Total Annualized Cost	Regional Impacts				Industry Profile		
		Total Output Losses	Total Earnings Losses	Min-Max Employment Losses (FTEs)		NAICS[a]	Establishments	Revenue (millions)
A. Teichert & Son	$45,743	$63,135	$9,414	0.15	2.03	327320	18	$165
America Lithographers	$3,723	$5,488	$1,227	0.02	0.14	323111	93	$854
Bimbo Bakeries USA	$6,814	$9,863	$1,845	0.04	0.19	311812	11	$101
Forterra Pipe & Precast	$3,407	$4,698	$773	0.01	0.14	327330	3	$28
Koefran Industries	$8,290	$12,520	$4,422	0.09	0.29	812210	34	$47
Pabco Clay Products	$6,726	$9,373	$1,638	0.03	0.28	327991	4	$37
Riverside Elevators	$3,407	$5,439	$1,462	0.03	0.14	493190	63	$155
Silgan Can Company	$7,865	$10,212	$1,804	0.03	0.32	332999	8	$28
TOTAL	**$85,975**	**$120,727**	**$22,586**	**0.40**	**3.52**		**234**	**$1,414**

[a]Some NAICS are not exact matches to those in Table 1. We believe Silgan was misclassified; those for Pabco, and Riverside Elevators are closely related, but there were no establishments found for the NAICS reported in the Manta/Zoominfo data. These changes do not affect results of the small business determination in Table 1.
Source: SMAQMD cost estimates, BEA RIMS II multipliers, and US Census Bureau (2012).

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